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Improving employee adopting of ERP by reducing employees' perceived risks through training

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IMPROVING EMPLOYEE ADOPTION OF ERP BY REDUCING EMPLOYEES' PERCEIVED RISKS THROUGH TRAINING

by

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Dedication

Firstly, I am grateful to Allah Almighty for my success in this thesis. Then, I wish to dedicate this thesis to my most beloved people, to whom I am sincerely grateful for upbringing, care, love, support, prayers and blessings; my father Sheikh Mohammed Binkhatlah who taught me the love of knowledge, my mother Mrs Bouthinah Kheyami who taught me the knowledge of love, my dearest grandfather Sheikh Mohammed Kheyami who is my best teacher of knowledge, and my beloved late grandfather Mrs Fadilah Alakhdar Ababsah who has been my highly respectable teacher of love.

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Author's Declaration

At no time during the registration for the degree of Doctor of Philosophy has the author been registered for any other University award without prior agreement of the Doctoral College Quality Sub-Committee.

Work submitted for this research degree at the University of Plymouth has not formed part of any other degree either at the University or at another establishment.

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Abstract

For at least two decades, ERP implementation has been one of the key topics that have been discussed by management and ICT researchers. Whilst it has led to an abundance of information and knowledge on the subject, there remain some dark corners which still need to be studied in detail. The lack of attention on these ignored topics could be the reason why successful ERP implementation remains a challenge for most organisations worldwide. Countries like Saudi Arabia, which are traditionally non-technology focused, face special challenges in this regard as adoption of new innovative technologies brings a plethora of challenges for the managers and employees. These challenges lead to perceived high level of risks, which in turn influence employees' willingness to adopt the system. This research investigated whether employees' perception of likely risks in adopting ERP influences the actual adoption of ERP, and whether training can be used to reduce employees' perception of likely risks in adopting ERP.

This was a mixed methods research. Data was collected using structured questionnaires and semi structured interviews. Causal relationship between variables was established using simple linear regression analysis of the questionnaire data. Qualitative data was thematically analysed to identify ways in which training can be designed to reduce employees' perception of risks in adoption of ERP and improve employees' adoption of ERP.

This research finds that the key perceived risks that may affect Saudi employees' willingness to adopt ERP are perceived performance, functional, time-loss and security and privacy risks. In addition, cultural factors were also found to affect Saudi employees' willingness to adopt ERP. Finally, this research finds that training can be used to reduce employees' perception of risks in adoption of ERP and improve employees' adoption of ERP. This research finds that contextualised, job and role focused training rather than generic is more effective in reducing employees' perception of risks. Involvement of managers who understand the culture and nature of job is quite useful in designing training programs. Training, that helps in improving the operational and management skills of the employees, is also found to be an important strategy for preparing employees.

Key words: Enterprise Resource Planning, Perceived risks, Training, Saudi Arabia, Large scale organisations

Key definitions

Enterprise Resource Planning (ERP); This is “an integrated information system that can be used to manage all the resources, data, and functions of a firm from shared data stores.” (Kallunki et al., 2011).

Employee adoption of ERP; In this research, this refers to the extent to which users use ERP systems for carrying out their routine official tasks (Ruivo et al., 2012).

Perceived risk; This is the uncertainty associated with possible negative outcomes in the future as a result of using a product or service (Bauer, 2005).

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Chapter 1: Introduction

1.1 Overview

Saudi Arabia is the largest IT market in the Middle East and government has stepped up its efforts make the Saudi Arabian economy technology focused (Hassan, 2020; Alsayat and Alenezi, 2018). Over 70 percent of Saudi organisations use some Enterprise Resource Planning (ERP) package (AlMuhayfith and Shaiti, 2020; Alsayat and Alenezi, 2018, Al-Dayel et al., 2011) with the most popular being Oracle and SAP. While Saudi Arabia has a high degree of penetration of ERP, it has its fair share of failed ERP projects (Harun and Mansor, 2019; El Hamdi and Abouabdellah, 2018; Albar and Hoque, 2015; Al-Jabri and Roztocki, 2015). High rates of failure of ERP projects is not unique to Saudi Arabia and similar failures have been reported by researchers from around the world (Harun and Mansor, 2019; Hou et al., 2016; Weng and Hung, 2014; Lee, 2010; Motiwalla and Thompson, 2009).

Authors such as AlMuhayfith and Shaiti (2020) as well as Eid and Abbas (2017) contend that most of the existing research focuses on implementation of ERP but does not pay sufficient attention to user acclimatisation and ERP outcomes. Implementing ERP solves only half of the problem since implementing a system does not guarantee that it will be used as desired in order to achieved desired outcomes by the employees. One of the key causes of full or partial failure of ERP projects in achieving its objectives is the low employee adoption of ERP (Hou et al., 2016; Matende and Ogao 2013; Pan et al., 2011; Al-Turki, 2011; Kronbichler et al., 2010; Lee, 2010). Failure to consider human aspects such as employee adoption can lead to failure of ERP projects such as what happened in case of ill-famed MADAR project in the King Saud University which failed because management could not involve the internal participants i.e. the workforce (Al-Nafjan and Al-Mudimigh, 2011). In fact, some researchers argue that poor employee adoption is the main reason for failure of ERP projects (Miller, 2019; Hou et al., 2016; AlBar and Hoque, 2015).

Kwahk and Lee (2008) contend that technical implementation is not enough to claim ERP success; it depends significantly on user behaviour when making full use of these systems. Therefore, in order to improve the success of ERP projects, it is essential to aim for higher user adoption of ERP (Ruivo et al., 2012). In order to achieve this, it is essential to look

at the implementation of ERP from the human resources and managerial perspective (Ali and Miller, 2017). In terms of ERP adoption, merely using technology to complete daily tasks is not sufficient; successful adoption of technology should lead to change in behaviour of users with more focus on performance measures such as efficiency, timeliness, low error rate etc. For example, it could refer to whether the users continue to use ERP to boost productivity and efficiency (Ozkan et al., 2015; Ruivo et al., 2012).

ERP projects have two aspects; the technology aspect and the human aspect. Human aspect refers to the need to consider whether or not users are skilled, trained and interested in using ERP systems. In the past, many researchers had failed to understand the significance of human aspects of ERP and focused extensively on the technical aspects (Ke and Wei, 2008). However, subsequent researches identified that one of the key determinants of success in ERP is the consideration of employees' behaviour and recognising employees' contribution in making the system successful. Reviewing literature on ERP during 1990 – 2015 period, Costa et al. (2016) commented that whilst there has been significant rise in the literature conducted on ERP, most of this has been focused on implementation of ERP, with very little research dedicated to usage of ERP. Chofreh et al. (2018) informs that ERP is a complex and an integrated approach and can be significantly affected by the human factors, such as lack of knowledge, skills and expertise which, in turn, could affect employees' willingness to fully embrace ERP systems. Pecherskaya et al. (2018) conducted a systematic analysis for understanding the factors that influence or impacts ERP implementation. Their study identifies that corporate culture, organisational behaviour and human factors could be significant factors that can affect the success of ERP adoption and implementation. Research, therefore, concludes that ERP needs to be embraced fully by the employees in order for the implementation to be considered as a success and this can only be done by considering ERP as more of an organisational matter which includes cultural and strategic aspects of the business (Ha and Ahn, 2014; Al-Turki, 2011).

Perceived risk: AlMuhayfith and Shaiti (2020) argue that "*identifying factors affecting the users while using ERP systems is critical to making the most effective use of ERP systems, which in turn should lead to better business performance*" (p. 3) Existing research has investigated the critical success factors (CSFs) in ERP

implementation so as to improve the chances of success in ERP implementation (Eid and Abbas, 2017; Albar and Hoque, 2015). Some of these factors such as perceived usefulness, perceived ease of use etc. have been extensively discussed in past researches. One of the factors that have been relatively less focused upon by past researches is the "employees' perceived risk in the adoption of ERP". Perceived risks have a significant impact on adoption of new technology (Kirongo and Huka, 2020) and it is therefore, recommended that perceived risks are mitigated to improve adoption of new technologies. ERP system implementation can bring a significant change within the organisations in terms of the everyday business activities and human practices (Ahmed et al., 2018; Bailey, 2018; El Hamdi and Abouabdellah, 2018). Therefore, such change could be overwhelming for the employees, who, in turn, may resist the implementation of the ERP.

According to Pan et al. (2011), human related factors, and not the technical issues are critical determinants in successful adoption of technology. Risk is often associated with something unforeseen and unexpected and the unpredictability of risks make it difficult to see it as objective reality. Talking in relation of technology adoption, Yousafzai (2010) defines perceived risk as "the potential of loss in the pursuit of the desired outcome from using new technology." Since perceived risk is self-conceived, it may have a greater impact on people's behaviour and consequently their desire or willingness to use the technology. Thus, it may be more challenging and critical to study the perceived risks that may affect employees' adoption of ERP.

According to Hou et al. (2016) as well as Matende and Ogao (2013), ERP implementation involves a re-engineering of organisational systems, process and functions and its success depends on employees' adoption or resistance of its implementation. Employees' may fear that ERP adoption may lead to social or organisational alienation, require adaption efforts for the new post ERP environment, causing them to resist its implementation. Many employees may feel that it may lead to lack of control and may lead to completely new and uncomfortable work environments (Hou et al. 2016). These perceived employee outcomes can lead to employee resistance to adoption of ERP and consequently, failure of ERP projects. Managing these perceived risks can help organisations in reducing user resistance to adoption of ERP (Hou et al. 2016; Akkirman and Harris, 2005). In countries like Saudi Arabia which are characterised by high uncertainty avoidance culture (Hofstede, 2017), the perceived risks with new technologies could be high, and this may drive user sentiment and adoption towards new technologies (Abdulah, 2016; Eid, 2011).

Studies have informed that implementation of ERP is different and more complex than the traditional systems, because of the large-scale change, a higher level of organisational impact, high cost, higher complexity and a larger level of user participation (Santos et al., 2018). Some of the factors that can restrict the success of ERP are the resistance of people to change, fear of change or losing power, lack of essential skills, and insufficient training. Jennifer Miller (2019) informs that ERP implementation can create many new concerns for the employees because of the perceived risks associated with the quality of the system, concerns related to the perceived level of support that organisation would provide and perceived risks towards the organisational ability to manage quality. Therefore, the critical success factor in ERP adoption and implementation are associated with training (Santos et al., 2018). Therefore, studies have also indicated that clear goals and objectives of ERP implementation are required to be developed before implementing the new system. Clear goals and objectives will not only inform employees about the importance of the new system but will also help companies to develop effective training strategies to help employees in developing required skills (Menon et al., 2019).

Kiran and Reddy (2019) have also informed that ERP implementation is significantly associated with change management, which could not be conducted as standard procedure, rather requires to undertake the influence of the human factors on ERP implementation. Harun and Mansor (2019) informed in their paper that individual readiness to change is an important factor to be considered for successful implementation of ERP. Individual readiness can be further impacted by the perceived influence of the organisational change that could occur because of the adoption and implementation of ERP (Harun and Mansor, 2019). Therefore, perceived employee risks can significantly result in the failure of successful ERP adoption.

Training: User acclimatisation is the key missing piece in the puzzle for ERP success (Eid and Abbas, 2017). AlMuhayfith and Shaiti (2020) conducted a study in Saudi Arabian SMEs and found that user acclimatisation through ERP training significantly impacts the ERP usage. Several researchers argue that organisational support, training, and computing support, benefit users to generate positive beliefs about the system (Hou et al. 2016; Son et al. 2012; Lin and Wu, 2004). Waiel et al. (2012) suggest that an integrated training plan helps in improving the involvement of employees in ERP implementation. As people learn to use the system, they gradually develop the knowledge

of the system which also shapes their perception of the system (Venkatesh et al. 2012). In order to use the system adequately, the users must accumulate knowledge related to the system, overcome any challenges involved such as resolving issues such as system crash or routinise the use of the system in carrying out their daily tasks (Houa, 2016). If the users find a lot of complexity in using the system and in accomplishing the tasks this will eventually influence their perception of the system being too difficult or erroneous to use (Dishaw and Strong 1999).

Phaphoom et al. (2018) conducted the study for analysing the importance of employee readiness and change management within the organisation for successful adoption and implementation of ERP. This study informs that considering the needs and concerns of the employees before the implementation of the new technology is necessary in order to understand their skills and their need for gaining new skills and education. Employee education ad knowledge about the new system reduces their perception of risks towards the new system and help them to recognise the advantages of ERP implementation (Alshare et al., 2019). People therefore need support from the organisation, like training and technical support. The more these needs are satisfied, the higher the probability of system success (AlMuhayfith and Shaiti, 2020; Son et al. 2012). While these arguments have been made by past researchers, none of the past researches empirically tests whether user training leads to a reduction in perceived risks and consequently in increased user adoption of ERP.

The issue with perceived risk is that it is built on a self-conceived view of reality and not necessarily based on facts. Facts based perceptions could be challenged or addressed through logical methods. Challenging individuals' perception is an extremely challenging task as it requires challenging their perceived reality. In this respect, training can be a useful measure for not only giving employees some real-life experience of using ERP systems but also in building their confidence in using the system. This research therefore aims to look at two aspects of the problem. Firstly, this research will investigate whether perceived risks lead to reduced employee adoption of ERP. Secondly, this research will investigate if training can be used to lower perceived risk and consequently, improve employees' adoption of ERP.

1.2 Aim and objectives

This research aims to investigate the impact of ERP training on end user's perception of risks in ERP adoption in Saudi Arabian organisations and consequently on the employees' extent of usage of ERP in these organisations. The key objectives of this research are as follows:

- To investigate if employees' perceived risks in using ERP affect their adoption of ERP.
- To evaluate the impact of training on employees' perception of risk in ERP.
- To identify the attributes of ERP training that can make ERP training more effective in improving employees' adoption of ERP.

1.3 Research questions

This research will aim to answer the following research questions:

- How do the perceived risks affect employees' adoption of ERP in large-scale Saudi organisations?
- Does training reduce employees' perception of risks in adoption of ERP in large-scale Saudi organisations?
- How can training improve employees' adoption of ERP in large-scale Saudi organisations?

1.4 Scope of research

The focus of this research is on investigating how management can use training to reduce perceived risks of employees and to investigate whether using training to reduce perceived risks will lead to higher adoption of ERP by employees. It should be noted that this research does not aim to specify any particular training program design, but rather it aims to draw attention towards the factors that must be considered while designing training programs for ERP implementation. In fact, this research argues that there is no perfect "one-size-fits-all" approach regarding training employees and hence organisations should develop their own training programs while implementing ERP, keeping in mind some basic attributes that this research aimed to identify. In this respect, this research does not evaluate any existing training programs but seeks to know what aspects should be considered while designing ERP training programs.

1.5 Justification for the focus on training

Various ERP training methods including change management; traditional training methods like interactive training manuals, tutorials, courses, resident experts, help components, as well as computer-based training method; and mental model-based training strategies have been explored and discussed in the literature review. However, this research specifically looks at training geared towards controlling and managing outcomes because research suggests that people tend to resist adoption to change, which may lead to negative outcomes. In this respect, this research specifically focuses on usage training (i.e. training programs aimed at understanding how to use the system). Such training is aimed at not only improving people's perception and attitude towards the new system but also improving the user acceptance of the ERP system. As such, the training can be conceptualized to encompass both appraisal and personal development planning.

The focus of the intervention under this study is on training mainly because training is critical to ERP implementation and it has been widely reported to have a positive influence on the performance of ERP in the post-implementation stage by eliminating gaps in organisational readiness for ERP adoption. Other interventions like good leadership and effective communication have also been suggested to address negative perceptions of ERP among employees. However, training has been widely reported as a critical success factor for implementation of ERP (Kiran and Reddy, 2019; Menon et al., 2019; Hou et al. 2016; Abukhader, 2015; Walston et al., 2014; Ha and Ahn, 2014; Son et al. 2012; Waiel et al. 2012; ALdayel et al., 2011; Al-Turki, 2011;). Grossman and Walsh (2004) refer to training as a "*stepchild of most software implementations, which cannot be overlooked or underemphasized*." They also argue that training reduces operational and cultural issues met during project implementation. Studies inform that the ERP system is very complex, as it involves various operations of an organisation, which would require rigorous training for the employees so that they can be effectively trained in adopting ERP and successfully implementing it in the organisation (Saleh et al, 2013; Ferrando, 2001). Training of the employees therefore helps in reducing their resistance towards the adoption of new technology and also reduces their perceptions regarding the risks associated with the adoption of ERP. Training is therefore a critical and important as part of the process of ERP implementation, which can be contextualized to should start from the beginning and only end when ERP implementation is complete.

Chapter 2: Literature review

2.0 Introduction

This chapter presents review of current literature on the topic. Extensive literature has been conducted on barriers to ERP adoption. This research is focused on managing perceived risks in ERP adoption, how they affect employees' adoption of ERP and how they can be managed through training. This chapter begins with a review of the literature on perceived risks. This section discusses the definition and types of perceived risks as well as the factors that may contribute to perceived risks in technology adoption. Identifying which factors may lead to rise in perceived risks is useful because it can, in turn, allow us to identify ways in which the perceived risks can be lowered. The contribution of culture to perception of risks in adoption of technology is also discussed. This section reviews literature on how perceived risks might affect user adoption of ERP. This is finally followed by review of literature on how training is useful in addressing issue of perceived risks and how training can contribute to improved user adoption of ERP. The chapter concludes with a discussion of the identified research gap and conceptual framework adopted for this research.

2.1 Perceived risk

The most significant obstacles in the successful implementation of ERP are the technical obstacles and the people related obstacles (Matende, and Ogao, 2013; Amoako-Gyampah, 2007). Within the organisations, human behaviour can be conceptualized in three different levels - individual level, group level and system level. While organisations pay a great deal of attention to technical issues, little attention is paid to people issues such as the lack of strong leadership within the organisation, lack of appropriate technical support as well as enhancing the knowledge and understanding of the users (Chang et al. 2008) leading to problems such as confusion, frustration and the conflict among the users.

Despite the significance of human factors in determining the success of ERP systems, insufficient attention has been paid to human factors in implementing ERP (Mitra and Mishra, 2016; Garg and Garg, 2014). Moon (2007) asserts that if the behavioural aspects of the ERP implementation are examined through the perspective of Robbin's Organisational Behaviour model on the individual level, then issues, such as user acceptance, user attitude, and perception can be significantly identified. The user acceptance and attitude toward the new technology can be significantly affected by the

perception of the risks or the perceived risks that users might have. Perception of risk is one of the key barriers driving users' resistance to the adoption of new technologies (Abdulah, 2016; Farzianpour et al. 2014; Yoon and Occeña, 2014(. The main issue here is the subjectivity of the perceived risks which makes it difficult to address. The intrinsic nature of perceived risks makes them more effective in terms of controlling user behaviour because it directly stems from a person's personal beliefs (Nasri and Charfeddine, 2012).

2.1.1 Perception of Risk and User Attitude

Broadly speaking perceived risks can be defined as the amount of perceived loss that can occur as a result of some event and the users' perceived certainty of the event likelihood of occurrence (Hassan et al. 2006). Perceived risks may shape employees' behaviour towards new technologies more than the actual risks they face in adopting new technologies (Abdulah, 2016; Farzianpour et al. 2014; Yoon and Occeña, 2014(.

Perception of risks towards new technology adoption and implementation has gained a significant place among the academic literature. Studies have identified that perception of the risks can create a significant barrier for the users and can restrict them from adopting new technology (Kirongo and Huka, 2020). Perceived risks can also be associated with performance expectancy, social influence and behavioural intentions of the users. Therefore, for effective adoption of the new technology, it is important that perceived risks of the users are identified and mitigated (Soliman et al., 2019). Employees may experience many perceived risks that may be associated with their interests, attitude and expectations from the organisation. Studies have also indicated that switching to ERP system is associated with great uncertainties, such as how the system would work and how the new system will influence the work practices within the organisation (Ahmed et al., 2018; Bailey, 2018). This is the reason that an individual's willingness to try new technology can be restricted because of the perceived risks towards the new technology. Studies have identified that perceived risks could be associated with many factors, such as the confidentiality and security of the data on the new system (Reitsma and Hilletofth, 2018).

Some previous studies have considered a perceived risk as a multidimensional construct and stated that perceived risk increased with ambiguity or to the extent of the associated

negative consequences (Gerber and Neeley, 2005). Perception of risks differs from person to person, firm to firm and industry to manufacture because of the subjective nature of such perception (Jamshidi et al., 2015). Kumara et al. (2013) have identified that perceived risks of changing the ongoing habit of working can also be a significant reason, behind the rejection of new technology. The employees may not be willing to change the working process in their organisation, as the ERP system requires the job function change and the employees may not be willing to have such change due to the perceived risk of being failed in adopting something new. Kumara et al. (2013) have further identified that there are two fundamental sources, which can result in user resistance towards technology change. First is the perception of risks associated with change is significantly very high that can result in user resistance and failure of the ERP system. The second factor is the habit, which refers to the current practices that the users are following in everyday functions at the workplace and the ways work are being done. As per the psychological and behavioural perspective, humans have the tendency or nature according to which humans want to continue with what they do and how they do (Klaus and Blanton, 2010). The organisational culture plays a significant role in this aspect. The user may perceive the risk of losing their position within the new system if they do not learn it appropriately, and users can also perceive the risk that new system will result in increasing problem at work regarding coordination and efficiency. Such perceive risks are associated with human attitude and behaviour and may result in affecting the implementation process (Ke, and Wei, 2008).

Lima et al. (2005) explored the concept of risk perception' at a societal level and suggested that different patterns of risk perceptions were important for the evaluation and prevalence of technological growth. Several other researchers such as Abdulah (2016) also confirmed that because individuals' perceptions are shaped by their culture, risk perceptions are also shaped by people's culture. Uncertainty avoidance dimension of culture refers to the extent to which individuals may resist uncertainty/risk (Hofstede, 2020). People who tend to be risk-averse tend to high levels of perceived risks, and this is quite common in countries with high uncertainty avoidance culture such as Saudi Arabia (Abdulah, 2016). Nelson (2005) suggests that stakeholders' emotions affect the implementation of ERP. Authors such as Abdulah (2016) as well as Alhirz and Sajeev (2015) have confirmed that perceived risks affect Saudi users' satisfaction and consequently, their adoption of new technologies such as ERP.

The key issue with perceived risks is that it may drive people to behave irrationally fearing even the non-existent risks. This may lead to exaggeration of risks causing even more significant barrier to adoption of technology. Learning about these perceived risks can help us develop more effective technology adoption strategies (Abdulah, 2016; Farzianpour et al. 2014; Bauer and Hein, 2006). Rationalising people's behaviour through open and direct communication can bring people's perception close to objective reality, making it easier to tackle the real issue that employees face when adopting new technology (Farzianpour et al. 2014; Usman and Shah, 2013(.

2.1.2 Different Kinds of Perceived Risks

Past researchers have talked about a number of perceived risks in adoption of new technologies. The studies have informed that perceived social risks are the risks that encompass personal ego and resistance towards technology. This personal ego can be affected or influenced by the poor perception of technology that can come from a reference group. This risk could also occur due to a lack of information sharing (Matende and Ogao, 2013). Perceived functional risks are the psychological risk perceptions that the system would not perform as expected (Rajan and Baral, 2015). The study of Chung (2007) informs that "*Function" is the most important factor to increase perceived usefulness*" (p. IV). For the successful implementation of the ERP system, it is significant that the functionality of the system is perceived as useful. However, the perceived functional risks can pose the barrier to the successful implementation of the system. According to literature, perceived social risk can be associated with the individual ego (Matende, and Ogao, 2013).

Other identified perceived risk is a time-loss risk, which means that users could perceive that purchase of the ERP system could take a long time, and this will result in wasting too much time of the organisation. This could also be associated with slow decision making, and users can perceive that this system adoption will waste the productive time of the company. Such perceived risk can significantly affect the adoption and implementation of an ERP system (Humayoun and Khan, 2010). Perceived financial risk can also pose a significant barrier in the implementation of ERP system, which means that ERP system has the possibility of being failed and will not be worth the financial price that will be paid for the system. The user can also perceive that ERP can be bought from other sources and could be bought at a lower price. Cost concern is also considered as the most

important factor that can influence or affect the customer perception for adopting an ERP system (Johansson and Ruivo, 2013).

Perceived security risks have been explained by various studies (Azmi and Kamarulzaman, 2010; Humayoun and Khan, 2010; Johansson and Ruivo, 2013; Matende and Ogao, 2013). These studies inform that user often perceives that the ERP system may not be useful and may not be able to keep the data secure. These perceived risks can pose a barrier to ERP adoption and implementation. Confidentiality and security of the critical information is the major concern for the employees that restrict them from adopting an ERP system because they perceive that such system will not be able to maintain the confidentiality of their data. Another risk could be the risk of uncertainty. The user may be uncertain regarding the adoption and implementation of the system. Since ERP system is a new technological innovation and it is currently its initial period, therefore, the user may have lack of information regarding the system and could develop a perceived risk of uncertainty regarding usage, benefits, and adoption of ERP system (Rajan and Baral, 2015).

Another form of the perceived risk is the misconception about the implications of the new system and insufficient information regarding the benefits and gains. Vayyavur (2015) has informed that misunderstanding or the misconception of the new system implications could occur due to various reasons. Some of the reasons could be the poor involvement of the management, lack of management support, knowledge gap, lack of training and education and poor change management strategic implementation. The miscommunication and misconception can significantly increase the perceived negative consequences of the system among the employees. The management support is vital for appropriate knowledge transfer and for avoiding any kind of misunderstanding about the new ERP system adoption and implementation. The acceptance of the new system can be affected if the employees do not have sufficient understanding of the benefits and gains of the ERP system. Therefore, the process of knowledge management is also found to be very significant, and a core process of transferring knowledge among the employees. Vayyavur (2015) has further informed that "*Mismatch between the capacity to transfer and absorb knowledge makes it difficult for an ERP project to achieve the desired results*" (p. 2762). Therefore, the systemization of the process is found to be very necessary for enhancing knowledge and understanding of the employees and to avoid or prevent the challenges that could occur due to perceived risks. Chadhar and Daneshgar (2018) had

also informed that in case of absence of the knowledge and understanding of misconception regarding the system, the success of the ERP system could be significantly affected. Therefore, it is a significant area of concern for the ERP implementation stage.

Several types of perceived risk have been widely used in previous research (Huang et al., 2004; Rindfleisch and Crockett, 1999). In fact, researchers identified a number of risks that may comprise perceived risks such as financial risk, physical risk, functional risk, social risk and time-loss risk, opportunity cost risk and information risk. The definitions of the several perceived risks identified by researchers are given in the table below;

Table 1 Categorisation of risk perception

Risk	Definition	Source
Functional risk	Functional risk refers to the possibility that the product or service may not function in a desired manner	Rajan and Baral (2015); Null (2010); Sajjad et al. (2010)
Social risk	Social risk refers to the risk that use of product/service may lead to loss of social connections or reputation	Johansson and Ruivo (2013)
Time-loss risk	Time-loss risk refers the likelihood that using the product/service may lead to loss of time	Rajan and Baral (2015)
Financial risk	Financial risk refers to the likelihood that using the product/service may eventually result in some form of financial loss	Rajan and Baral (2015); Azmi and Kamarulzaman (2010); Lu et al. (2006)
Information risk	Information risk refers to the possibility that an individual is operating in an environment of asymmetric information	Matende and Ogao (2013)
Psychological risk	This refers to the possibility that using or implementing a new system may lead to anxiety and stress due to possible loss of jobs. It is associated with inability and lack of knowledge among users to adapt to the	Peng and Nunes (2010); Chadhar and Daneshgar (2018)

	changes in the work practices required by the new technology.	
Security and privacy risk	This is the likelihood that usage of a product or service may lead to compromise of personal information, which could harm the user's reputation and security.	Rajan and Baral (2015); Matende and Ogao (2013)
Performance risk	This is the possibility that the performance or efficiency of execution of a given task may be lowered as a result of adopting a new system or using a new product. This could be as result of limited knowledge and skills to match the requirements of the new system.	Popovič (2017); Sykes et al. (2014); Jalal, (2011)

Many perceived risks are often related to the culture; for example, people from high uncertainty avoidance cultural backgrounds may display a higher level of perceived risks in adopting new technology as compared to individuals coming from low uncertainty avoidance cultural environments (Abdulah, 2016).

2.2 Perceived risks and user resistance

While researchers have listed many risks that may affect users' adoption of ERP, none of the past researchers has looked at which of these perceived risks affect the adoption of ERP. Looking at these risks will help us in developing a more effective strategy to implement ERP so as to reduce overall perceived risks and consequently improve the adoption of ERP. It can be suggested that there is no concept of risk but rather our perception, view or understanding of the risk. In fact, individuals and organisations prepare for risks based on their perceptions of risks. While these arguments indicate that risks and perceived risks are somewhat overlapping, but it can be argued that perception of risk is a much stronger influencer of people's behaviour as compared to the actual risk while the risk is a stronger predictor of behaviours of organisations (Abdulah, 2016). This is probably because of the objective manner in which most organisations operate; so, they form an opinion of future risks based on historical data and concrete/verifiable information or expert opinions. Individuals, on the other hand, do not have the same objective approach towards risk assessment and formulate their perception based on their subjective view of the future. This indicates two things; firstly, that individual's

perception of risks is not always grounded into facts, reality or verifiable information but rather on people's own belief. Secondly, that people's behaviour is influenced more by their perceptions of risks rather than by actual risks. This means that by managing people's perception, it is somewhat possible to influence people's behaviour.

In line with these arguments, this research aims to test whether it is possible to increase the adoption of ERP among employees by lowering their perception of risk through training. Azmi et al. (2010) highlighted the importance of different types of risks associated with the adoption of technology through a conceptual framework. Sajjad et al. (2010) conducted a study on the impact of usage of a personal computer on risk perception of managers. For their research, they used a modified model of TAM with an additional construct of Perceived Risk. Their research concluded that the risk factor is reduced when the use of computers is enhanced. Null (2010) investigated the role of perceived risks in consumer acceptance of health-related technologies. He too developed a model by adding perceived risk variable to the TAM model. TAM helps to understand the individual perception regarding the use of ERP (Sternad and Bobek, 2013). Lim, Lee and Yap (2016) are currently undertaking research to study the impact of Perceived risk on user acceptance of SaaS ERP. They too, have developed a conceptualised model adding Perceived Risk as one of the influencing variables to the TAM model. To researcher's best knowledge this is one of the handfuls of studies which have discussed the role of perceived risk in users' adoption of ERP, but there are plenty of studies indicating the significance of the role of perceived risks in the adoption of new technologies.

Loss of control or power over the outcomes is one of factors that may drive employees' resistance to adoption of technology. It may lead to social alienation leading people to collectively resist implementation of new technology (Hou et al. 2016). These perceived employee outcomes can lead to employee resistance to adoption of ERP and consequently, failure of ERP projects. Managing these perceived risks can help organisations in reducing user resistance to adoption of ERP (Hou et al. 2016; Akkirman and Harris 2005). Kim and Han (2008) in their work looked at the impact of perceived risk on the adoption of different kinds of technologies. They concluded that Perceived Risk changes the effects of Perceived Usability and Perceived Ease of Use on Behavioural Intention. In the context of ERP, this will mean that if users perceive it risky to use ERP managers need to emphasize on Ease of Use. This research looks at usage training which is eventually aimed at improving perceived ease of use. People need supports from the

organisation, like training, technical supports, etc. and the more these needs are satisfied, the higher the probability of system success (Son et al. 2012). Several researchers (see, for example, Hou et al. 2016; Son et al. 2012; Lin and Wu, 2004) argue that organisational supports, namely senior management support, training, and computing support, benefit users to generate positive beliefs about the system. Waiel et al. (2012) suggest that an integrated training plan helps in improving the involvement of employees in ERP implementation.

One of the problems with past research is that it does not pay sufficient attention to individualised factors that may case lower adoption among users. Failure to consider users' perception towards the adoption of new technology leads to failure in understanding that for wholehearted adoption of any voluntary technology participation by users is critical. Some researchers have drawn attention towards this issue, but those researchers do not present practical solutions as to how this voluntary participation component can be improved. This is the gap this research aims to fill. In this respect, this research aims to look at lowering people's perception of risk in the adoption of technology and investigates whether this will lead to improved voluntary adoption of technology by employees.

The study of Seymour and Van Vuuren (2014) has focused on identifying the various perceived risks that arise on the user adoption phase. The study identified that most of the ERP system fails to provide significant benefits to the business because of the employees, who do not accept the new technology. The perception of the users is affected by five main elements. These elements are "implementation actions, affective response, system perceptions, job impact, and facilitating conditions" (Seymour and Van Vuuren, 2014). The implementation actions could refer to the strategies and the actions that are taken by the management for implementing the ERP system. Such actions taken for implementing the system are required to be very comprehensive that must understand the significance of the people involved and their perceptions. If the implementation actions, do not involve the perception of the users and do not involve them in decision making, can result in increasing the anxiety and uncertainty among the users regarding the new system. Therefore, it can enhance the level of perceiving risks among the users and can also result in creating human constraints that could further result in poor implementation and failure of the system (Seymour and Van Vuuren, 2014).

The second important element is the effective response. The response of the users towards the new technology is required to be positive if the management requires the ERP system to be successful in their organisation. The affective response of the users or the employees within the organisation is generated through effective implementation actions (Saleh, Abbad, and Al-Shehri, 2013). When the implementation actions have involved the employees in decision making and had taken significant actions to make employees aware of the positive aspects and benefits of the new system, then the affective response of the employees will be positive, and the level of the perceived risks would be lower. However, if the actions and strategies are only focused on managing the complexities of the system and do not focus on the needs and perceptions of the employees, then such system would not be positively accepted by the employees (Rajan, and Baral, 2015). It is very important that the process of implementation of ERP has strategic values in order to reduce the development of perceived risks among employees or users. The purpose of the ERP system is mainly to provide a wide variety of functionalities to the business. It is also required to support some important features, such as "flexibility, modularity, widespread, finest business processes and global focus" (Ahmad et al., 2016).

Therefore, the ERP systems are mainly used to modernize the work system according to the new technology and the increasing needs of the business process. Therefore, for developing such a system, it is significant that the employees have a positive system perception. The management and the employees (also considered as the employees) will not have the same perception towards the ERP system. It has also been found through the study of Ahmad et al., (2016) the difference in the perception can occur due to the hierarchy in the organisation and the management and the users may not have the same perception regarding the usefulness of the system. The system perception also encompasses the perception of the users towards the long-term benefits of the system and its capability of eliminating the barriers to business productivity (AlBar and Hoque, 2015). The user may experience a higher workload because of the more functions and inputs are required in the new system. Therefore, the increase in the workload can also result in increasing frustration among the employees, but in retrospect, this can be beneficial for the management of the organisation as the new input and information can help in drawing accurate reports and make correct decisions (Seymour and Van Vuuren, 2014).

The employees within the organisation have different roles to play, and their work roles are according to hierarchy. Therefore, the hierarchy in the system affect the ways, employee views the system and considers their usefulness. According to the study of Singla (2009), the users have been found to be positive during the adoption phase and are often excited about the new system adoption. However, after the functions are deployed to users, the change in the behaviour of the employees is identified, which turns from positive to negative. This could be because the employees become partially dependent on the new system, which theoretically increases work pressure and work anxiety (Ngai, Law, and Wat, 2008). The system perception acceptance includes some important factors, such as confidence and trust in the new system, understanding the value of the new system and completing the task with the help of the new system. However, the perceived value of the new system and the level of the perceived risk from the new system can significantly affect the system perception and can also affect the success of the ERP system implementation. Analysis of Seymour and Van Vuuren (2014) has identified that the employees often perceive that the new system can make their life more difficult and may not be compatible with their line of work.

However, if the system perception among the employees is affected by the perceived risks, it could not be effectively implemented. The perceived risks in terms of having a system perception could be lack of knowledge about the system, fear of being unable to understand and execute the functions, the risk of having limited knowledge about the new system and fearing the loss of position (Peng, and Nunes, 2010). The user may display resistance towards the adoption of the ERP system because of having a negative perception of the system. Peng and Nunes (2010) have also identified a gap in the literature regarding the lack of evidence about the fear of the users and the negative perception of users towards the new system. The negative or the positive system perception of the users can also be associated with the attitude of the users. If the users have developed the negative attitude towards the system on the initial stage, then they may become resistant towards adopting or implementing it or could also result in failure of the system post-implementation (Addo-Tenkorang and Helo, 2011).

The fourth element that can affect user adoption and could enhance the chances of perceived risks is the job impact. Implementation of the ERP system can significantly result in enhancing the competitive advantage for the business or the organisation. It is also significant for improving the business process and functions and to make the business

achieve a significant place in the dynamic business environment. However, the companies that are working since, many years without the implementation of the advanced technology may find difficulty in adopting it. The employees working in such organisations have often adopted a system of working and due to the company's decision of adopting new technology can result in increasing the perceived risk of job impact among the employees (Chang et al., 2015). The ERP system can significantly change the process and functions of the business, as they were traditionally completed. The employees can develop the anxiety about losing their job, or the perceived risks of losing their position within the company may result in a failure of the system. The risk of losing their position or job is highly significant to be addressed, because not all the employees of an organisation may have the skills of working in new technology, or they may also lack any knowledge or understanding about the new system (Chang et al., 2015). This can result in developing a perception of insecurity among the employees. The main reason behind such perceived risk is again the focus on companies mainly on solving the complexities of the system and the lack of focus on employee perception (Alalwan et al., 2016). Therefore, it becomes the sole responsibility of the management to take innovative actions and motivate the employees to develop a positive attitude towards the change. The positive perception of the employees can be achieved by making them understand that new system will not impact their job in a negative manner, but will help them to improve their performance (Venkatesh et al., 2012).

The fifth element that could affect job performance and also the success rate of ERP system implementation in the organisations is facilitating conditions. Seymour and Van Vuuren (2014) have identified that some of the facilitating conditions in the organisations encompass, communication among various members, hierarchal communication, training quantity and system support. The facilitating conditions are significant for motivating users to use ERP systems. If the facilitating conditions are poor, the employees may not develop a positive attitude towards the system, and job dissatisfaction may also increase among the employees. The facilitating conditions also include the conditions that offer supportive system (Ghobakhloo et al., 2012). The process of the system adoption and implementation can become smooth with the positive attitude of the employees and the facilitating conditions that allow employees to work effectively, receive support from management and get motivation and job security. The role of the top management can be very significant in enhancing facilitating conditions that could reduce the work anxiety

and negative behaviour towards new technology, and who could manage change effectively within the organisation (Shao et al., 2011). The study conducted by Matende and Ogao (2013), concluded that "the implementation of an ERP system differs from that of any traditional information system due to its integrated nature which causes dramatic changes on workflow, organisational structure and on the way, people do their jobs" (p. 524). Therefore, it has also been identified that ERP system adoption and implementation require news ways and facilitating conditions. Perceived ease of use of the new technology is also associated with the technology self-efficacy perceived enjoyment in conducting activities and perceived usability of the new system. Studies have also informed that perceived usefulness is also associated with subjective norms, output quality and job relevance and such factors can be achieved with effective organisational support (Valdebenito, and Quelopana, 2018).

2.3 Cultural impact on Perceived Risk and user resistance

According to the study of Alhirz, (2018) "*the influence of culture on ERP acceptance is contextualised within the national cultural dimensions suggested by Hofstede's theory because these dimensions influence the implementation or user adoption and acceptance of ERP*" (p. 4514). Culture includes the customs, rules, belief and values that are influenced by the national culture, or the language, religion, belief and also geography. Since these aspects differ from country to country, the resulting culture in those countries also differ (Taras et al., 2011). The most popular categorisation of culture used in management studies is the one based on Hofstede's work. Geert Hofstede prepared an index based on the following five dimensions-

i. Power distance
ii. Individualism or collectivism
iii. Masculinity or femininity
iv. Uncertainty avoidance
v. Long-term orientation

It has also been revealed that cultures tend to be formed around regions which share common economic systems, environmental characteristics or history. For example, Scandinavian countries like Sweden and Denmark tend to have low power-distance,

individualist oriented cultures while Arabian countries like Saudi Arabia tend to have high power distance and collectivist oriented culture (Taras, et al., 2011).

The cultural values of the individuals can impact and influence their ability to accept enterprise resource planning (ERP) (Alhirz and Sajeev, 2015). The influence of the culture can be seen and can be mediated through the perceived user resistance, involvement and level of satisfaction with ERP. The effect of culture can be associated with resistance to change. The adoption of new technology requires bringing many structural changes at the workplace that can also affect the organisational culture, which is being prevalent since, a very long time. The changes in the existing culture may result in user resistance, and also the rate of perceived risk may increase in new technology adoption (AlHirz and Sajeev, 2013).

2.3.1 Theoretical Aspects of National Culture Values and Perceived Risks

The culture mainly exists on three levels- national culture, group culture and organisational culture. The national culture is the form of the belief, values and norms that are shared by the individuals of a certain nation and affect their ways of work, thinking and perceiving every aspect. Group culture is mainly the form of culture, which is sub-set of national culture, which means that even when the group of individuals share the same national culture, yet they can develop their own culture. This is mainly because the group culture can be formed on the basis of race, language, ethnicity, gender and religion. However, organisational culture is the form of culture that is developed within organisations with its own corporate values, belief and norms in the form of corporate culture (Schepers and Wetzels, 2007). For understanding the impact of culture on the perceived risk in the adoption of ERP, psychological contract theory has been used (Klaus and Blanton, 2010).

Psychological contract theory has been defined as "*beliefs that individuals hold regarding promises made, accepted, and relied on between themselves and another*" (Alhirz, 2018, p. 4512). It is also considered as the subjective understanding of what is believed and perceived by the employees. This theory also helps in explaining how organisational change is accepted by employees. Culture or national culture affects the perspective and psychology of the people when the organisation undergoes change. Personal values and belief that are shaped by the culture influence the social and personal actions of

individuals (Klaus and Blanton, 2010). Different cultural values, norms and belief have a different impact on different individuals. Therefore, it is important that the cultural values of the employees should be incorporated during the implementation and adoption of ERP.

Klaus and Blanton (2010) have identified that psychological contract breach is also termed as a violation and this violation of the contract can result in causing the emotional experience of disappointment, anger, frustration and resentment among the employees. Therefore, the perceived unmet promise can lead to a psychological contract breach. In the case of the perceived unmet promise, the employees often compare their contributions made within the organisation and the reciprocal contributions that are made by the organisation. On the basis of this comparison, the employees form the psychological contract breach. When the breach is identified by the employees, they start interpreting it in the light of fairness, judgement, outcomes and other considerations to understand that the perceived breach is severe.

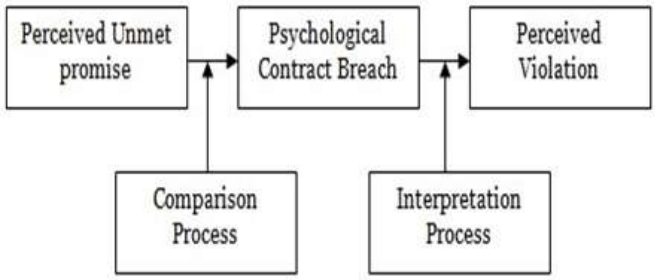

Figure 1 Psychological contract theory (Source: Klaus et al., 2010).

Klaus and Blanton (2010) have asserted that psychological contract theory has been mainly studied in the management and psychology; however, it can also be applied for understanding the user resistance to ERP adoption and implementation. Klaus and Blanton (2010) further informed that there are twelve determinants that can be divided into four important dimensions that influence the psychological contract, which further influences the perception of the ned-user and impact the level of resistance towards ERP adoption and implementation. The psychological contract theory can be significantly utilized to understand the theoretical ways by which ERP users perceive their interaction with the ERP system in a positive or negative manner. This can also help to understand

how the perceived culture at the individual level also affect their ability to adopt an ERP system and their resistance towards the new system.

The four key dimensions of User resistance explained by Klaus and Blanton (2010) are shown in the table below:

Table 2 Four key dimensions of User resistance

Key Dimensions	**Determinants**
Individual Issues	uncertainty, input, control, power, self-efficacy
System Issues	Complexities and technical problems
Organisational Issues	Communication, training, facilitating environment
Process Issues	Lack of fit, job or job skills change

Adapted from: Alhirz (2018)

Another theoretical framework that helps in understanding the perceived risks among ERP users or the employees is Bagozzi's Framework developed by Bagozzi (2007). Bagozzi (2007) identified that the TAM model of technology acceptance is not appropriate. The author explains that behaviour of the invidious should be treated like the tool in order to achieve the fundamental goal and the behaviour of the individuals, should not be represented by their intentions, as uncertainties can play a significant role in the time period that occurs between intention and adoption, and that uncertainties can affect the decision of the user to accept or reject technology. Therefore, Bagozzi (2007) has proposed a shift in paradigm that could more effectively explain the user adoption and acceptance of the new information system.

This model is significantly dedicated to explaining the decision-making core that includes goal desire → goal intention → action desire → action intention. This theory of decision making is rooted in the decision-making variables and process that are universal in nature. The model explains that the goal desire of the individual is very significant that influence their intentions and actions. The decision-making process is also influenced by the causes and effects of decisions and self-regulatory reasoning. The study of Bagozzi (2007) explains that self-regulation can be reflective or reflexive in nature, under which reflective self-regulation is where the individual gives more preference to personal morals and self-evaluative standards in order to perceive the significance or the new technology. The

reflective self-regulation gives rise to goal desire or action desire on the basis of personal morals and evaluation standards. On the other hand, Al-Jabri and Roztocki (2015) have identified that Reflexive self-regulation is based on the learned values, traits, dispositions and vices.

According to the reflective self-regulation, the individual base their desire and intentions of the morals and self-evaluation. Culture has a very significant impact on this, as the individual moral and evaluation shills are often influenced by the culture, in which the individual is born or brought up. Morals are the values and belief that an individual learns from their culture and apply them in different aspects of life. Therefore, for implementing the ERP system, it is significant that focus is placed on the cultural aspects of the organisations and its people, here ERP system is required to be implemented (Alhirz and Sajeev, 2015). The national culture significantly influences the ways people perceive things around them. The process of adoption and implementation of ERP within an organisation can be influenced by two main cultures. Firstly, it is influenced by the culture of the developers, and secondly, the culture of the host (where ERP is implemented), such as ERP is developed in Western countries, while implemented in Eastern countries (Alhirz, 2018). The studies have also identified that during the implementation phase of ERP system, the developer's culture mainly occurs, which reflects the views of the ERP developers and the host culture may include the perception of the managers and employees. The employees may not be able to effectively adopt the ERP software culture, which in turn can give rise to many perceived risks that can influence the employee's perception towards ERP system implementation. Therefore, it can be said that psychological behaviour, intentions and actions of individuals are significantly influenced by their culture and cultural background. Some of the cultures promote high risk-taking (Western culture), whereas some other culture may not promote high risk-taking (Eastern culture), and this can result in making the ERP implementation as unsuccessful. The study of Alhirz, (2018) also explains that the implementation of the new technology can be an ambiguous situation for the employees, for whom this technology is very new. Therefore, the employees can display resistance because of being threatened by new technology, about which they have limited or no knowledge.

2.3.2 Cultural Impact on Technology Acceptance Behaviour of People

Culture is an important part of human lives. It shapes the behaviour attitude, thinking and perceptions of the individual and have the undeniable impact of every aspect of human life (Cesarini and Gunnarsson, 2014). A study conducted by Sunny et al. (2018) identified that cultural values have a significant impact on the process of technology acceptance and the cultural values impact people on an individual level that affects their thinking and perception. Therefore, the cultural aspects should be taken into consideration when the organisation formulates the new strategies for ERP implementation. Culture is also one of the many elements that provide uniqueness to every individual and also helps in differentiating one group of people from other groups (Cesarini and Gunnarsson, 2014). The culture affects the ways in which people interact with others, behave at workplaces and how they perceive the significance and value of others. Therefore, AlBar and Hoque (2017) believe that culture is a critical factor in shaping the behaviour, attitude and perception of people; therefore, it should be taken into account during ERP implementation. Hammer and Champy (1993), "*A company's prevailing cultural characteristics can inhibit and defeat a reengineering effort before it begins*" (as cited in Cesarini and Gunnarsson, 2014, p. 20). The culture can impact the ERP implementation to a very significant extent, therefore, requires special consideration.

According to the technology acceptance model (TAM), technology is accepted by the individual on the basis of its perceived usefulness and perceived ease of use. If the individual finds that technology is useful and beneficial in improving their performance, they will react positively towards it. Perceived usefulness is the perception of the users towards the extent to which the new technology is beneficial to improve their performance, and the perceived ease of use is the perception of the users about the extent of the efforts that are required to apply and use new technology (Sunny, Patrick, and Rob, 2018). The earlier researches and the evidence included in the aforementioned sections have informed that perceived usefulness and the perceived ease of use are the important factors that influence the behavioural intentions of the individual. However, another significant factor that can influence perceived use and perceive ease of use is Culture.

The cultural factors that can influence the perception of the employees can be determined and explored from the cultural dimension theory of Hofstede (Al-Gahtani et al., 2007). One critical perceived risk cited by Aslam (2010) is the fear of losing power and the fear of losing the job. In countries with high power distance, information is a significant power

indicator. This is mainly true in the developing nations like, Saudi Arabia and UAE, where the power distance is very high, and the information of the business process is considered as an important power element, which is not accessible for all. The information in such firms are mainly controlled by the higher management or the organisational leaders, and the employees can receive some amount of information according to the trust of their superiors over them. Therefore, Abdinnour and Saeed (2015) identified that in the companies with significant power distance, the employees could worry about the implementation of the ERP for facilitating information on all levels can result on the loss of power and position. Therefore, the perceived risk of losing power can be very high among employees. One the other than the perceived risk of losing the job can be high in the staff on the lower hierarchal levels because ERP system implementation can result in automating a significant number of the functions that were traditionally manually handled. Therefore, the ERP implementation can result in job substitution and increasing the perceived risk of losing the job.

Similarly, Seymour and van Vuuren (2014) had also informed through their survey analysis that some of the employees believe that new system will take over their position and they cannot work with such system, thus want to leave their jobs before getting terminated in order to avoid unemployment stage. The labour substitution, is, therefore, a significant perceived risk that can result in the negative perception of the users towards the system and may resist the implementation of such system in a successful manner, resulting in the failure of most of the ERP system implementations. Therefore, the perceived risk of losing a job and labour substitution is a crucial issue at the implementation stage, which has not been significantly addressed in the literature (Aslam, 2010). Peng and Nunes (2010) have confirmed that more the organisation gains the ERP capabilities, the perceived risks of job lose increases, and more obvious redundancies occur. This can also further result in increasing many psychological anxieties among the employees and could result in ERP resistance. Therefore, studies have considered ERP implementation as more of a people issue rather than a technical issue, because of its major dependence on the users, their perception and their work for making the system successful.

Another key issue is the lack of focus of the top management on the short-term behaviour of the employees. The short-term behaviour is mainly considered as the phenomenon that companies apply in order to achieve the short-term benefits, while do not reflect on the

challenges and the problems that may arise on the long term (Lai, 2017). The short-term behaviour of the management and the managers in developing countries like Saudi Arabia can be a significant problem. As the country like Saudi Arabia is experiencing the significant growth in the political, social, economic and market environment, the managers may focus on the short-term strategies in order to reach fast in order to adapt to changing market needs. Due to the short-term behaviour, the management may develop short-term strategies and action plans for supporting the ERP system, which may not reflect the needs and understanding of the users. Therefore, according to the study of Chadhar and Daneshgar (2018), this can further result in increasing the psychological anxieties and inabilities among the users to understand and implement the system. Therefore, the perceived risk of being unable to exploit the system properly can result in an employee's negative perception towards ERP system.

Individualism/Collectivism can be considered as the degree to which the individuals are integrated with the groups. Individualism is often understood as the value orientation under which the people are primarily concerned about themselves or their immediate family members and consider own self responsible for making personal decisions (Al-Gahtani et al., 2007). However, collectivism is the cultural value that mainly emphasizes on cohesiveness and focuses on making decisions that are for the benefit of all. The culture that is mainly followed by Saudi Arabia is collectivist, where the people often focus on working in groups and also considers the interest of every individual within the group. It has also been found that individualist people tend to be more self-conceived and consider their own interest as a priority and above the interest of others, while in a collectivist culture, people believe that self-identity is based on or dependent on the group identity (Nistor et al., 2014).

Although studies have found that adoption of ERP in Saudi Arabia is under infancy and there is also a gap in the literature regarding exploring the various issues associated with ERP adoption (AlBar and Hoque, 2017), though very limited research has been conducted on the influence of culture in ERP adoption, one significant study is conducted by Alhirz (2018). According to him, culture plays an important role in ERP adoption and implementation. The author has explained the adoption of ERP through various cultural dimensions, such as power distance, individualism and uncertainty avoidance. The users' perception of the national culture at the individual level impacts their perception towards the quality attributes of the technology (Alhirz, 2018).

In individualist culture the personal goals of the individuals are significantly more important than the goals of the groups; therefore, the individuals in such culture are considered to be highly influenced by the perceived usefulness of the technology (Abbasi et al., 2015). Therefore, the factor of perceived usefulness can be more significantly applied in the Western countries that mainly display individualism. However, in the collectivist culture, the decisions of the individuals are influenced by the decisions of the groups (Abbasi et al., 2015). The perception of people is often influenced by the perception of the group. According to the study of Abunadi (2013), the culture in Saudi Arabia is mainly collectivist; therefore, the individuals in such culture are found to be influenced by the normative belief. The normative belief of an individual can be considered as the belief about the extent to which other people, who are important o they think that individual should perform a function or not (Abbasi et al., 2015). The studies have also found that Islamic culture and Islamic societies are mainly collectivist in nature; therefore, individuals in such society are influenced by normative belief, which was further conceptualised as the subjective norm by Ajzen (1991). Therefore, the process of technology acceptance in a collectivist culture is mainly influenced by the support provided by management and the perceived ease of use. Giving more significance to the perception and belief of others in the collectivist culture can result in causing resistance towards accepting new technology. When perceived ease of use is not positively taken by the people, then resistance towards technology acceptance could be increased.

This could also be understood from the basic conceptualization of the belief of individuals. In terms of perceived usefulness, which could also be considered as the subjective probability to view of the usefulness of technology for the self-interest or for improving the individual work performance can be favoured by individualist (Lee et al., 2013). In the collectivist society of Saudi Arabia, the subjective probability is mainly related to the groups, which specifically favours the normative belief and not the perceived usefulness. The perception of the people towards adopting or rejecting technology in the Saudi Arabian organisations is highly influenced by normative belief because people in Saudi Arabia are found to be highly compliant with the group values and group perception (Al-Gahtani et al., 2007).

Another important factor for understanding the perception of the user towards new technology and perceived risks of adopting and implementing new technology in Saudi Arabian organisations can be analysed through the factor of uncertainty avoidance.

Various studies have been conducted earlier to understand the impact of cultural factors on technology adoption and acceptance. These studies have shown that the cultural background of the people plays a significant role in affecting their perception towards the uptake of new technology. Uncertainty-avoidance can be defined as the "*level of risk accepted by the individual, which can be gleaned by his/her emphasis on rule obedience, ritual behaviour, and labour mobility*" (Alhirz, 2018, p. 4511). There are very few studies that have focused on examining h relationship between cultural factors and technology acceptance in Saudi Arabia. The study conducted by Al-Jumeily and Hussain (2014) has identified that the process of technology adoption and implementation in Saudi Arabia is very complex because of the high level of uncertainty avoidance among Arabian people. The high uncertainty avoidance also means that people avoid change in life. This is also appropriate in terms of new technology acceptance in Saudi Arabia. Arabians do not wish to make changes frequently in their life and work, due to which the process of ERP adoption and implementation in Saudi Arabia organisations can become significantly difficult. Al-Jumeily and Hussain, (2014) inform that "*they tend to resist this kind of uncertainty continually, as they see it as posing new risks in an already uncertain world*" (p. 38).

Most of the studies conducted in Saudi Arabia regarding the adoption of new technology are about the adoption and acceptance of ICT and Information system (Al-Gahtani et al., 2007; Alhirz, and Sajeev, 2015; Srite and Karahanna, 2006). These studies have identified that Arabs display a particular cultural feature in terms of technology acceptance, according to which Arabs prefer the traditional ways of communication within the workplace (such as real-time mode, radios, telephones etc.) rather than using the modern Information system tools for communication (Im et al., 2011; Srite and Karahanna, 2006). Other studies have also found that people in Saudi Arabia are often unwilling to change their habits, values, traditions and life interactions (Khushman et al., 2009). Khushman et al. (2009) also identified that culture is the most significant element that affects the ways in which technology is accepted or rejected in Saudi Arabia. It was found that Saudi Arabian people perceive the risk of time loss, fear of losing power and position and fear of being unable to adopt new technology environment in the workplace that restrict them from adopting and implementing new technology. The extent of perceiving risks is greater among Saudi Arabians due to their cultural influence. Therefore, it can be said the

uncertainty avoidance have a significant influence over the perceived user involvement and user resistance towards ERP system.

Power distance is another cultural dimension that significantly affects the ways people perceive and understand the technology or adopt or reject it. Power distance informs about the ways through which people perceive and accept the power distance among them. It has been identified that traditionally there is a high-power distance in the Saudi Arabian society. High power distance is also a significant feature of the collectivist culture (Sehli et al., 2016). According to Sehli et al. (2016) "*power distance is 'the extent to which the less powerful members of organisations and institutions (like the family) expect and accept that power is distributed unequally*" (p. 344). The high-power distance in Saudi Arabian society informs that power is mainly centralized and remain in the hands of the autocratic leaders, who also have the absolute power within the company. The managers and leaders within the organisation have the absolute power of taking the decisions and may symbolically consult with their subordinates. However, this is not the case that is seen regularly because the subordinates are often expected to follow the instructions and commands of the organisational leaders and have very limited decision-making power. This cultural factor is, therefore, also a significant problem for the successful implementation of ERP (Alhirz and Sajeev, 2015).

The high or the low power distance within a society is mainly associated with its traditional and social structure. The adoption and acceptance capacity of the people are significantly influenced by its societal culture. The societal culture significantly influences the absorptive capacity of the individuals. Cohen and Levinthal (1990) defined the absorptive capacity "*as the ability of a firm to recognise the value of new, external information, assimilate it, and apply it to commercial ends*" (as cited by Sehli et al., 2016, p. 343). According to this capacity, the adoption or the acceptance of the technology is influence by the transformative, exploratory and exploitative learning of the individuals. Roberts et al. (2012) further developed the model of the adsorptive capacity and informed that individual identify the external knowledge and transform them into the knowledge that is important for accepting new technology. The external knowledge that an individual receives mainly comes from the societal culture and the traditional values of the society (Sehli et al., 2016). The societal culture in Saudi Arabia is conservative, restrictive and based on the principles of Islam. According to the analysis conducted by Cassell, and Blake (2012) of the Hofstede's model of cultural dimensions have informed that country

with high power distance and greater uncertainty avoidance display lower rate of the technology acceptance and implementation.

Studies have also found that high power distance has a negative influence over the knowledge acquisition and knowledge assimilation process of the individuals by (Cassell, and Blake, 2012). Therefore, the knowledge acquisition capacity of the individuals in Saudi Arabia can also be affected by the high-power distance culture that can result in increasing the perceived risks among users. When the knowledge acquisition capacity of the individuals is affected due to power distance, they will be able to have the lack of understanding and knowledge towards the new system adoption and implementation that would result in increasing the user resistance and perceived risks towards system implementation. Gillespie and Riddle (2015) have also identified that power distance in Saudi Arabia is relatively high with the score of 95, which can be a significant problem in user resistance, perceived risks and user's inability to adopt and implement an ERP system. However, a gap has been identified in the literature regarding placing the focus on the societal culture of Saudi Arabia and culture of high-power distance in the context of ERP implementation (Sehli et al., 2016). The fear of the unknown, fear of losing power and position and the fear of having less technical skills are the major perceived barriers that are associated with the societal culture in Saudi Arabia. Therefore, for the adoption and implementation of ERP in Saudi Arabia, it is significant that organisations focus on different cultural aspects and cultural dimension, and to implement cultural training that could prevent the different fears that people could perceive.

Sehli et al. (2016) have found that the absorptive capacity of the individuals requires knowledge acquisition from the external environment, which has also been associated with individualistic and collectivist culture. In terms of the individualism and the collectivism dimensions, the studies have informed that within the individualistic culture, the individuals have the greater freedom to think and act independently and such individuals are more open towards the new opportunities and new innovations (Arslan, 2009). In the case of the absorptive capacity of the individuals, the acquisition of the knowledge and leaning requires more individualistic efforts and individual initiatives. However, the absorption capacity is affected in the collectivist culture due to the lack of the individual efforts, although knowledge assimilation is high in collectivist culture due to strong ties among people and high rate of informal communication. However, the studies have also identified that relationships among the people are often very complex

and context-based, which means that people from the individualistic cultures are often more open towards diversity, which positively affects the communication and interaction among people (Khan and Khan, 2014). While, the people from collectivist culture are not exposed to the diversity that negatively impacts the communication and interaction process, which further impacts the knowledge and information sharing process (Khan and Khan, 2014). In the context of culture, Saudi Arabia scores 20 for collectivist culture (Gillespie and Hennessey 2010), and therefore, the family and group culture is very high. However, the implementation of ERP system within the organisation requires more individualistic efforts and diversity, which can result in threatening the culture and cultural practices at the workplace, resulting in user resistance towards new technology (Aldraehim et al., 2012).

According to the analysis of the various cultural factors and the societal culture of Saudi Arabia, it can be said that perceived risks are associated with cultural practices within the society and also within the organisation. The problem of perceived risks arises due to many reasons. The perceived usefulness and the perceived ease of use of technology have been explained under TAM, to understand user's behaviour towards new technology. However, very limited studies have explored the significance of the cultural factors and their influence over the individual's behaviour in Saudi Arabia (Aldraehim et al., 2012). For understanding the cognitive and psychological adoption of ERP system by the employees in Saudi Arabia, it is very important that cultural factors are explored, and their contribution in increasing the problem of perceiving risks among employees is understood. Cultural features have been very significant in influencing the perspective and behaviour of individuals and can increase perceived risks, as new technology acceptance can threaten their way of working (Alateyah et al., 2013). Cultural barriers are, therefore, very significant to be explored for understanding the user acceptance and adoption of an ERP system in Saudi Arabia. This will also further help in understanding the perceived risks that could occur due to cultural influence.

Culture can be an important element to understand subjective norms. As defined earlier, subjective norms are the social pressures that influence the ways people take actions or influence the perception of people. Therefore, according to societal, cultural analysis, it can be found that subjective norms and their influence over people and also affect their perception of risks and their behaviour towards the adoption of new technology such as ERP.

2.4 User resistance and ERP adoption

Users' resistance may be a problem that occurs in the information system implementation. Several researchers, such as Klaus et al. (2015), have identified many reasons behind such resistance, such as lack of knowledge. Ali et al. (2016) identifies two kinds of resistance such as active and passive in the organisational context. Of the two types, the active resistance is less common as employees tend not to openly express their discontent, especially in high power distance culture nations such as Saudi Arabia. Passive resistance involves trying to conquer, even defects. At times, the workforce may seem to support the change, but in reality, they would be having resistance after the actual implementation. They can even stop working in the new environment and show negative support to the system. Such occurrences can lead the organisation to face constant delays in satisfying the customers.

The aspect of user resistance is especially vital concerning the implementation of the ERP. User resistance occurs not only during the execution of the ERP system but also after the implementation of ERP, leading to failure of realization of benefits from the implementation of ERP. Haddara and Moen (2017) stated that user resistance in the ERP could result from several factors such as lack of management support, lack of implementation process involvement, the poor interaction of users and designers, and lack of proper technical support. Such a situation occurs when the complexity of the system rises for the user (Haddara and Moen, 2017).

Several scholars like Haddara and Moen (2017), Ali et al. (2016), Abdinnour and Saeed (2015), and Altamony et al. (2016), state that the user resistance is the first reaction that appears out of the employees when the system shows complexity. Furthermore, the authors also mention that there is a need for strategic consideration to address the problems related to user resistance. Lin et al (2018) stated that one of the key problems that the organisations face is the user resistance in the ERP implementation. That usually happens when the employees are new to a certain technology.

Furthermore, Popovič (2017) state that change is a primary factor behind the user resistance that occurs within a firm committed to innovation. Moreover, the author again identifies that the lack of personal involvement in the working environment can become another factor behind the user resistance. The user resistance even occurs when the firm decides to change or update the technology. Bhattacharya and Wamba (2015) identify

strategic aspects that can promote the betterment of the firm by resolving the user resistance issue. The authors state that if the reasons behind the user resistance are determined, the organisation can attain a higher benefit. Such reasons may include loss of status, loss of power, interpersonal relationship altered, change in job content, job insecurity, misinformation, and uncertainty (Bhattacharya and Wamba, 2015).

Several problems have been identified by Ahmad et al. (2015) that should be resolved to have effective implementation of ERP system. Such issues include project management approach, employee resistance, e-business strategy, and complexity. However, researchers like Freeze and Schmidt (2015) focused on one aspect of the problems associated with user resistance: employees. The authors observed that employee resistance increases when the resistance is found in the professional management of change.

However, the debate about the resolution of the user resistance continues to occur in several types of research. Many researchers like Alhirz and Sajeev (2015), and Laumer, Maier and Weitzel (2016) have debated whether the user resistance phenomenon is negative or positive for a particular firm. These authors have identified that the user resistance can be positively inclined due to the functional requirement and sudden change in the organisation for effective productivity. At many times, the authors see it as bringing adverse outcomes such as dysfunction. Bintoro et al. (2015) identifies several other reasons behind the negative activity of user resistance such as lack of familiarity, lack of homogeneity, working patterns alteration, threatened communication channels, and altering relationships.

Resistance from users can cause many problems, including negative reaction to technology implementation. In this phenomenon, the user determines the outcomes of the implementation of the ERP system in the organisation. Abdinnour and Saeed (2015) identify and discusses user resistance and its possible consequences. Such behaviour often represents natural functionality and behaviour from the side of the users toward a specific change in technology. The inability to have knowledge and understanding ability concerning the ERP system and lack of user involvement can be the two most prominent reasons behind the low-level functionality and resistance in the ERP implementation. The organisation can start by avoiding failures to invoke user acceptance concerning ERP system.

2.4.1 Aspects that lead to resistance

Several obstacles were identified by Newman (2015) that arise before the implementation of the ERP process. The author reports that people barriers are 62% higher while the business process and technical issues are 16% and 12% respectively. The most dominant issue in the above aspect was observed to be a people issue. The same results were obtained in the study done by Popovič (2017). However, Popovič (2017) identified that after the implementation of the ERP system, the problem persists making implementation difficult. Several organisations shift their concerns about business performance, training and system transition, reporting, and ongoing support.

One of the significant problems that occur after the system has gone live is a system failure. Users have often forced to use the system without enough knowledge of how to use the system or without being comfortable with the system. Furthermore, organisations often do not provide adequate support for employees who continue to struggle with the system. Bintoro et al. (2015) identify the difference between the resistance level before and after the ERP system has gone live. It was observed that the issues related to change management and people issue have been most crucial to attaining 62% of the attention before the system goes live. Moreover, the primary implementation problems occur after the system goes live comes down to 51% concerning training, change management, and adequacy of internal staff. However, other works such as Popovič (2017) identifies people issue as highest after the implementation of the ERP system. The author also identifies that after the implementation of the process is done and the user resistance shows up, the organisation and the employees both fail to get the ultimate benefit.

Abu-Shanab et al. (2015) identify three crucial reasons behind the resistance of the users during the implementation of the ERP system. People usually resist the change observed in the organisation due to the negative experiences in the past. Individual user's resist the change because of a specific feature that becomes difficult to handle by the users. Lastly, the resistance occurs due to the failure of proper interaction between the system and the user.

Usman et al. (2014) identified the five most important factors that lead to resistance. One of them is the resistance to change so that the users can prevent something valuable to them. Furthermore, users can also have a lack of trust that can lead to further problems

and resistance (Abdulla, 2016). Information insufficiency leads the employees to resist change. The perception of both the employees and the employer are different concerning the change in technology. It is observed that the employees see through the vision of cost, whereas the employers observe the benefits behind a certain change. Such differences lead to dissatisfaction because the employees are involved in thinking in a limited framework. Several employees also have a low tolerance to the technical and other change in the organisation (Li et al., 2017). Individual employees have a fear of not having sufficient knowledge in the implementation of the new process, which in many cases, becomes true. Lastly, several employees require the application of additional efforts needed to have the experience of the new system. Guimaraes et al. (2015) report the noticeable difference between the user expectations and the system offering leading to employee resistance. Such results occur when the organisation overstate the mission and vision of a particular new implementation so much that the users end up neglecting the actual impact of it. The gap between the management of the ERP system and the expectations of the employers can be lowered when comprehensive training is given to the employees. Furthermore, Lapointe and Beaudry (2015) observed that the support and acceptance from the side of the employees would not be achieved until they have all the training about how to use the ERP system. However, such training facilities should be widely given to the employees without having it limited to a specific function.

Usman et al. (2014) identify miscommunication between the employers and the employees in the organisation as one key cause of resistance to change. The employees are usually unaware of the benefits that the organisation and the employees can get after the implementation of an individual system and change. It means the users are challenged to come out of their comfort zones to be occupied in accomplishing the change.

Ju et al. (2016) state that users tend to have trust issues if the organisation continues to ignore them for long without providing appropriate training. Due to the inadequate education and training, the employees are unable to provide effective means of outcomes that are expected by the employers in the firm. Since these employees get highly unexpected results out of the implementation process, they present significant resistance to the process. Such a situation leads to having a poor quality of the product that dissatisfies the customers altogether. Moreover, the reason why top management does not consider giving appropriate training can have many reasons such as lack of funding, and even lack of knowledge. However, the organisations should be involved in providing

insight into the problems the employees can face while using the system and how they can conquer it at best. Moreover, the employees should also be made aware of every issue that would be occurring while dealing with the implementation program. Otherwise, the employees can feel a lack of trust and support from the organisation that can further lead to the resistance from them.

When an unprepared employee desires to handle a situation in the ERP system, he might take a longer time than the experienced ones because of unfamiliarity with the system. Such issues may create bottlenecks leading to the slowdown of the system, which might be upsetting for the team members and the management. Drummond et al. (2017) state in their paper that when the employees lack proper training concerning the ERP system, the organisation can face drastic effects, even system failures. The post-implementation training can clarify the doubts regarding the ERP system and give employees hands-on training facilities to deal with the situation. When the user is unable to utilize the ERP system correctly, the system leads to the ultimate failure and further resistance from the employees.

One of the prominent causes of resistance is the resistance to technology altogether, especially when users find a particular technology threatening to attempt. Several reasons such as approval hierarchies, migration of reports, data load, data gathering, and similar other ERP systems seemed to have been possible reasons for resistance because such systems become too hard to learn and utilize for many employees (Drummond et al., 2017).

The ERP system upgrade brings about new technology at the hand of the employees. The employees usually get usability issues whenever they strive to use the ERP system without having appropriate experience in it. Drummond et al. (2017) state that concerning regarding the system would reduce if the users possess a better understanding of the system and the process. However, the authors also observed that when the users are given proper guidance, they tend to have lesser resistance towards utilizing the system.

The users observe four more prominent issues related to technology at organisations such as navigation problem, interface issue, report format issue, and data gathering. Users get frustrated when they do not get the appropriate opportunity to utilize the system with overall knowledge. Reducing unfamiliarity with new technology should be a high priority as stated by Drummond et al. (2017) because it can lead to quite damaging consequences;

for example, misreporting of data and transactions. Furthermore, the authors determine the reason for the complexity that occurs due to the availability of data in huge amount after the implementation process. Excessive information may lead to confusion among people who are unsure of how to utilize such a large amount of information. Popovič (2017) determines various reasons behind user resistance concerning technology such as change, user training, and job situations lead the employees toward poor user interface and navigation problems that are unable to handle. Moreover, it is observed that the ERP systems have usability issues and the implementation insecurity, technical issue, and expectations.

2.4.2 User Resistance in Saudi Arabia

Studies have also found that adoption and implementation of the ERP system by the organisation, positively affect their productivity and also improves employee's performance (ALdayel et al., 2011). Despite the significant positive aspects of the ERP system and its effectiveness within organisations, the cases of the failure of the ERP systems are highly reported in the literature (AlBar and Hoque, 2017). The problem of user resistance is high in the adoption and implementation of new technology, and similarly, the adoption and implementation of ERP are also affected by user resistance.

The market research studies have informed that Saudi Arabia is the largest IT market in the Middle East region, as the country significantly aims towards becoming the leading IT and e-business nation in the near future (Aldayel., 2011). This has been the significant reason that organisations and companies in Saudi Arabia have increased the investment and their expenditure in the ERP systems in the various industries, such as education, oil and gas, management etc. A study conducted by Alhirz (2018) has identified that the adoption of the ERP systems in Saudi Arabia is under development, which means that such systems are fairly new for the Saudi Arabian organisations. The new technology has resulted in increasing the problem of user resistance because the employees have limited or no knowledge regarding the new system, limited technical skills, cultural factors, personal belief and attitude as well as the influence of the external factors (Escobar-Rodríguez and Bartual-Sopena, 2015). Adoption of the ERP enforces a new way of managing the business and, therefore, it affects the behaviour of the employees, who have been conducting business in a different manner since a very long time. A sudden change

in the process and practices negatively affects the thinking, perception and attitude of the people towards new technology (Escobar-Rodríguez and Bartual-Sopena, 2015). It is important to understand that ERP systems affect and influence all the functions and processes of the business.

However, most of the studies conducted to understand the ERP adoption in Saudi Arabia, are focused on analysing the critical success factor of ERP implementation and failures of ERP systems. However, very little focus has been placed on understanding the reasons for failures whereby failure is measured as failure to realise intended objectives from implementing ERP.

According to the study of Alhirz and Sajeev (2015), the implementation of the ERP systems has witnessed a high rate of failure in developing countries. However, there has been a lack of studies that have explored the different aspects of the failure of the ERP system in developing nations. The main failure of the ERP systems has been identified in the form of the cost and time overrun. Most of the studies conducted towards exploring the ERP adoption and implementation have found that the problems of user resistance are the main reason of ERP failure (Ghobakhloo et al., 2012; Hu, 2014; Humayoun and Khan, 2010). The studies have identified that the perception of the employees is very significant in determining the success and the failure of the ERP systems. Therefore, such a system includes the perception of the various individuals within the organisation. If the employees perceive the system to be inappropriate and consider it to be very complex, then system results in failure. Aldammas and Al-Mudimigh, (2011) have found that ERP failure rate is similar in developed and developing countries and would face the same fear of failure in ERP implementation. Therefore, there has been very limited research conducted on the ERP adoption and implementation in Saudi Arabia. However, Alhirz and Sajeev (2015) have considered that the case of Saudi Arabia is different from other developing nations. AlHirz and Sajeev (2013) have identified that the main reason for the ERP system failure in Saudi Arabia, is the user resistance towards new technology. The employees resist adopting new technology and reject its implementation in the organisation. Al-Shamlanand Al-Mudimigh (2011) asserted that there are four important factors that occur and due to which the ERP implementation in Saudi Arabia fail are lack of the IT infrastructure in the country, lack of top management support, failure in changing the business process and lack of change management training and education. The users in Saudi Arabia, resist the new technology or the ERP implementation in

organisations because they receive very limited support from the top management, which is very important for adopting the new system and feeling confident that new system will benefit them (Al-Shamlanand Al-Mudimigh, 2011). Alsayat and Alenezi (2018) have identified that poor execution and implementation of the ERP system is associated with poor training and education of the employees. This further increases the perception of risks and results in user resistance, which further leads to ERP failures. The lack of understanding of the perception and thinking of the internal and external participant is another cause of ERP system failure (Alsayat, and Alenezi, 2018).

Studies informed that due to high power distance in the Saudi Arabian organisations, there is lack of involvement and support of the senior management and lack of the senior management commitment, users perceive negative consequences of the ERP system implementation. Other problems that have been identified by Alsayat, and Alenezi, (2018) are lack of communication, lack of education and knowledge sharing and lack of user training results in the failure of the ERP systems. More than half of the individuals, who participated in the survey conducted by Alsayat, and Alenezi, (2018) had informed that lack of communication is the major reason for ERP system failure and user resistance towards new technology. Lack of communication and knowledge sharing through effective support and training leads to negative user perception towards ERP systems, and this significantly affects the ERP implementation (Al-Turki, 2011). Alsayat and Alenezi, (2018) also identified that lack of training is not considered as an important factor by the Saudi Arabian organisations, as only 21% of the survey participants inform that insufficient user training leads to ERP system failure and poor implementation. However, one of the key findings of Alsayat, and Alenezi, (2018) was that respondents, who inform about the lack of sufficient training lead to ERP implementation failures were those, who fall in the category of having the work experience of one or two years. This finding informs that mindset of the young Saudi employees is changing, who are considering and acknowledging the significance of user training. However, this factor has not been considered as the major factor that could lead to ERP implementation failure, which displays the knowledge gap (Alsayat, and Alenezi, 2018).

2.5 Training and perceived risk in ERP adoption

Ha and Ahn (2014) and ALdayel et al. (2011) found that training is a critical success factor for successful implementation of ERP. Ha and Ahn (2014) further state that continuous improvement efforts and on-going organisational support, such as training have a positive influence on the performance of ERP in the post-implementation stage. Alaqeel et al. (2017). Training and Education are recommended to be adopted to assure the smooth adoption of ERP in Saudi Universities. Such training help eliminates gaps in organisational readiness for ERP adoption. Al-Turki (2011) found that change management programmes and extensive training were found to be essential for smooth ERP implementation process. Similarly, Abukhader (2015) and Walston et al. (2014) emphasize the relationship between training and the perceived benefits of information technology.

Saleh et al. (2013) found that user support is considered an important element that fosters ERP implementation success. Al-Jabri (2015) as well as Eid and Abbas (2017) suggest that user training programs and communication campaigns should be designed in such a way that fosters the ease of use and convinces the ERP stakeholders about the benefits and values of ERP systems. While these researches have emphasised the usefulness of training in improving adoption of ERP, but they do not specify which kind of training should be provided to ERP users. However, Noudoostbeni et al. (2010) contend that identifying the correct training model is also important for the successful implementation of ERP. This indicates that before designing what kind of training to provide, we need to know the objectives of training. As argued in the previous section, reducing perceived risk can improve adoption of ERP, so this research argues that one of the objectives of ERP training should be to reduce perceived risks. However, it needs to be tested whether such training will lead to any improvement in the adoption of ERP.

Al-Turki et al. (2006) commented that implementing business leadership rather than IT leadership, accompanied by extensive change management and training programs can improve the implementation of ERP. The type of training can have a significant impact on the adoption and implementation of ERP. Training and education of the employees help in reducing their resistance towards the adoption of new technology and also reduces their perceptions regarding the risks associated with the adoption of ERP. The successful implementation of ERP is important for enhancing productivity and also for helping the organisations to gain competitive advantage. Type of training is also an important concept

that is required to be addressed before providing training to employees. In case of implementing ERP, "*education and training refer to the process of providing management and employees with the logic and overall concepts of the ERP system.*" (Rajan, and Baral, 2015: 107) Studies inform that the enterprise resource planning system is very complex and complicated, as it involves various operations of an organisation. Such a complex system requires very rigorous training for the employees so that they can be effectively trained in adopting ERP and successfully implementing it in the organisation (Saleh, Abbad and Al-Shehri, 2013). Often, the integration of new technology or change in the organisation increases stress and anxiety for the employees, which also results in resisting them towards change. Therefore, the in-depth training and education of the employees regarding the ERP system and its method of usage can be an effective approach for successful implementation of technology and reduced perceived barrier of risks (Saleh, Abbad and Al-Shehri, 2013). The in-depth training of the employees or users can include change management training, skills training and corporate training.

This section will explore the different kinds of training and education programs that can be used for overcoming the problem of perceived risks. Studies have identified that perception of the users towards technology is not formed through facts or reality; rather, it is based on the subjective perception of reality. Subjective perception is the main factors that give rise to perceived risks. However, the subjective perception of the individuals may be different from each other; therefore, the perception of the risks can also differ from each other (Abdulah, 2016). Therefore, the aforementioned evidence has shown that objective methods can be used to reduce the impact of subjective reality and further reducing the perceived risks. It has also been identified that the perception of the people is influenced by their life experiences, therefore exposing the people towards the desired life experiences can also mould their perception to obtain the desired results. The exposure of individuals to positive life experiences can significantly benefit the organisations in achieving positive results from a user's perception. Therefore, training has been identified as the main element that can provide positive experience and knowledge to the users and can improve the ERP adoption (Mitra and Mishra, 2016).

The evidence from the literature have also informed that there is a lack of the empirical evidence that could inform that usage of the training can help in reducing the problem of perceived risks among the ERP users (Eid and Abbas, 2017(. Another finding from the

aforementioned sections is that the perception of the individuals is significantly influenced by their life experiences, which could encompass the personal and professional lives of people. The perception of the people and the problem of perceived risks is also influenced by the different cultural aspects. There are two kinds of culture that significantly influence the perception of the people, firstly the societal culture and second is the organisational culture (Khaparde, 2012). Therefore, it has been identified that the perception of the risks will be influenced by two different implications, firstly the perception of the risks is influenced by the culture and the relationship that individuals share with other individuals within the organisation in the form of a shared culture and the second is the culture that they form through personal experiences. However, not all perceptions that are perceived by individuals are influenced by a single factor, but the effective training provided to the individuals can significantly reduce the perceived level of the risks towards adoption and implementation of ERP. Therefore, this research focuses on exploring the effect of training on the perception of risks of the employees and how training programs can improve ERP implementation.

2.5.1 Significance of Training

Majority of organisations have given their nod of approval to Enterprise resource planning. If undertaken in a proper manner, it can outline a foundation for the future growth of an organisation and improve productivity (Eid and Abbas, 2017). Their effective implementation would lead to millions of dollars, and if people lack on the training part, things are likely to fall apart. ERP deals with integration among various systems and process, the role of employees and their duties change in various ways. The employees would need to align with the demands of the new system. Training is important as part of the process of ERP implementation and must be placed on the high priority list. It should start from the beginning and only end when ERP implementation is complete. Training ensures that from the higher rank to the lower rank, all employees use the same data. It paves for high-quality data and reduces human error in the process. The first stage of ERP is to define, outline functions or procedures in depth. This task is not as easy as it sounds. ERP has different meanings in various organisations. In the manufacturing literature, you are likely to come across different definitions of ERP. To compound the problems, the concept of ERP is merging with e-commerce or knowledge management. The employees must understand the nuances of ERP so as to integrate successfully into

the working module of a company. Without a proper understanding of it, successful implementation is not possible. Most ERP implementation connoisseurs emphasize the value of proper education and training for their managers and employees. The general perception of people is to resist change in the manner of accomplishing their tasks. Analysts are of the view that active support from top management is of paramount importance when a company is planning wholesale changes.

Companies adopt a liberal attitude as far as funds for new software or hardware evolve, but the proper budget allocation for ERP training is ignored. ERP software is intimating and complex at first glance. Monk and Wagner (2012) have identified that those companies that spend less on ERP adoption and implementation can undergo loss and failure of the ERP system. The cost would include how to educate employees to use the software in doing their job, reduction of non-productive time during training. Kapp, Latham and Latham (2016**)** Employees can participate in EPR training on their desktop administered from any corner of the world. The training would help the user to understand the new system effectively and adopt them in their practice. Training program within the organisation can become an integral success factor (Gargand Garg, 2014). Studies have identified that most of the ERP systems fail because of the lack of training programs for users. The companies often focus on the technical complexities associated with ERP systems and do not place focus on the significance of human factors (Ekanayake, 2014). Atkinson (2013) stated the main reason behind the training and education programs for the users is to ensure that users are comfortable with the new system and it also increases their knowledge and understanding towards the new system. Therefore, Vayyavur (2015) informs that "*ERP concepts, system features, and hands-on training are vital aspects of ERP implementation. The training needs not only to cover how to use the new system but also the new processes and understanding the integration of those processes within the system*" (p. 2761).

The study conducted by Law et al. (2010) has informed that lack of training can significantly result in negatively affective the ERP adoption as well as implementation, as due to lack of training, users can apply their own process and ways for manipulating the system or can also develop the negative perception towards ERP system. The lack of training programs within the organisation will not make the complete benefit of ERP, realizable unless the employees have the complete knowledge that how they have to use the system for improving their personal performance as well as the productivity of the

organisation (Lee et al., 2016). Therefore, it becomes significant for the management of the organisation to develop the training strategies in advance and need to update such strategies regular in order to meet the changing demand and requirements of the employees. The main aspect of the ERP training, development and education programs are mainly to employ the logic and the competition for the concept of ERP system. The problem of the perceived risks has been found to be very high among users. Various perceptions of the risks occur due to different conditions and experiences. Therefore, training can help in providing a positive experience to the individuals and help them to develop a positive perception towards the system (Vayyavur, 2015). The content of the training program and the type of training program should be focused on the perception of risks among the users. Rajan and Baral (2015) identified that factors that affect the perception of the users and influence the usage of ERP can be identified through monitoring and can be rectified through effective training.

The studies have also identified that continuous training is a very critical element for meeting the changing needs of the business and enhance the skills and knowledge of employees (Liu et al., 2011; Rajan and Baral, 2015; Vayyavur, 2015). Though it is easy to implement the new hardware or software for the business process improvement; however, it can take months to adjust the learning curves within the workplace. The major challenge that the organisation can face in ERP implementation is the selection of the correct training program and adequate training for the employees. Vayyavur (2015) also informs that the level of the training programs required for the employees is often underestimated by the top management and organisational leaders. Training is an area that can resolve most problems during implementation. Some companies understand the importance of training, whereas, in the case of others, it is a single step as part of the overall implementation of the ERP project. Dezdar and Ainin (2011) have also asserted the significance of the training and education of the employees for the successful implementation of ERP. They conducted the empirical analysis of the organisational factors that can influence or affect ERP implementation and identified that lack of training and education for employees increases the perception of different psychological risks among users. The user perceives negative perception towards the system and also believe that the new system can negatively affect their performance. However, training and education helped in improving the perception of users by enhancing their knowledge and skills about the new system (Dezdar and Ainin, 2011).

Upadhyay et al. (2011) state that sufficient training provided to the employees has the significant potential to improve the performance of the employees and to enhance the profitability of the ERP system, while the lack of training can act as a major hindrance. The behaviour and attitude of the people have also identified as the factors influencing the perception of individuals. Perception of risks can, therefore, be affected by the positive or negative attitude of the individual towards technology. Therefore, training and education programs can be used by the organisations to build a positive attitude of the employees towards the ERP system (Upadhyay et al., 2011). Training has also identified as the main element in implementing change within the organisation. Training, education and development programs offered to the employees can help them to effectively adjust to the changes occurring in organisations due to new system implementation (Aloini et al., 2012). ERP training for the employees increases the chances of the successful adoption, implementation and use of the ERP system. Almajali et al. (2016) have found that implementation of the ERP system without proper training can result in drastic consequences and may bring undesirable results, such as ERP failure. The perceived risk of lack of skills and technical knowledge is also very high among the employees, and lack of training can increase the risks of being unfit with organisation resulting in user resistance towards ERP system. Therefore, the training can also help the employees in improving their technical skills and can help them to learn the new processes.

Dorobat and Nastase, (2012) focused on compiling the various critical success factors that can affect the implementation of ERP in the training phase and identified the factors that can affect the ERP implementation at the training phase are "*top management support, project management, training curriculum, user training commitment, personnel skills and competencies and training budget*" (p. 623). Dorobat and Nastase (2012) further identified that implementation of ERP within an organisation requires enormous training, which could be expensive and could constitute of 10% to 20% of the total implementation cost of the project. Therefore, the support and commitment of the top management are considered vital for the training programs. Vayyavur (2015) has agreed on the significance of starting the training program with a detailed analysis of the training requirements of employees. This can also be considered as an important step for analysing the perception and attitude of the user towards new technology. The analysis of the attitude and perception can help the top manager to understand that what perceptions of the risks are affecting the abilities and capabilities of the employees. The aim pf the user

requirements analysis can also be effective to understand their present level of knowledge, what do users perceive about the new system, how many users are to be trained and content of the training curriculum (Dorobat and Nastase, 2012; Vayyavur, 2015).

ERP system is often new for the organisations and employees, who might have never used them or work on them before. Therefore, on the onset of the project, a large volume of the training sessions and programs can be required to support the employees and to make them comfortable with the new system (Hasibuan and Dantes, 2012). It is also important to understand that employees of the ERP employees should feel that training is relevant and will help them to improve their performance. Therefore, informing the employees about the benefits of the training and ERP system can significantly help organisations to achieve their aims. Therefore, the significance of the training program and success of the training program depends on its ability to deliver the important and effective knowledge to the employees and enhance the employees' skills on the individual level, because it has been identified in the earlier sections that the success of the ERP system significantly depends on the individual efforts (Aldraehim et al., 2012). The ERP training in the organisations is required to be provided to the managers and the employees because they are the one who will be significantly required to work on the new system. Studies have also confirmed that synchronizing the ERP training with the overall project implementation can bring positive results by reducing the perception of risks among employees (Rajnoha et al., 2014).

Top management support means the willingness to provide authority and power for the successful implementation of a project. It is one of the important facets of a successful implementation of an ERP program. The organisational support has been very important for the success of an ERP programme but feels that less support has adhered to technical knowledge (Saleh et al., 2013). Training or education means management provides employees with logic and concepts of an ERP system. The ERP system is complex, and for successful implementation, rigorous training is called for. Lack of training could be the prime reason why an ERP project fails. With education and training, it will reduce the anxiety or stress of the employees, and they will be in a much better mental space to perform tasks. The belief and increases the confidence of the users is increased manifold with proper training modules. At the same time, it provides managers with pertinent and useful information about an ERP system. They would be able to figure out whether it fits into the proposed system of a company (Hasibuan and Dantes, 2012).

On implementation of an ERP system, the legacy systems are framed out. There is highly technical and organisational complexity with the human angle to the process often underestimated (Hasibuan and Dantes, 2012). Upon implementation of ERP, it might require changes in an organisational structure with new roles assigned to employees. Extensive preparation, along with training, is needed to be successful in these endeavours. Some implementation methods have gone off track budget-wise, some failed to churn in the desired results, and some even having failed to take off. Most of the large organisations have implemented ERP in some form or the other. But in recent times there has been a paradigm shift of ERP to the needs of small business. There does exist a growing interest in terms of ERP implementation (Papajorgji, 2013). However, the significance of ERP training for employees remains the same. The training and education programs for the employees are significant in all kinds of organisations. Training in the implementation phase is significant for reducing the barrier of perceived risks. But, the training needs of the employees or the employees can change during the implementation phase and could also be diversified. Therefore, adopting a single training method can be ineffective (Umar et al., 2016).

For an organisation that has data readily available, ERP needs to be used with a certain level of integrity. Data integrity is dependent on a host of factors. The main factor is a manual interpretation of data, defective hardware, and unstable programs. Human error is a major issue with the feeding of data. According to Pries and Quigley (2012), these errors can be minimized with formal education along with hands-on training on the job, but most organisations rely more on system implementation and focus on training or education is on the lesser side. Employees are reprimanded for the failure to input the data correctly. According to Rabaai (2009), an ERP system personifies new roles for the employees. It provides more control for management and improves the working dynamics of workers. There does exist a risk in the implementation of ERP in an organisation that is driven by creativity and innovation. The implementation of the ERP system is a comprehensive project with a set of complex guidelines. There is a definite need to interpret the challenges in relation to contextual dimensions. In some ways, the ERP system imposes its own logic in an organisation, and this may force employees in committing to a disciplined method of working. Organisations depend more on the minds of employees rather than their physical bodies.

Conrad and Poole (2011) state that CNA Insurance Corporation relies on the support of a virtual office which helps in integration of various employees in various divisions or units. Each employee is provided access to an intranet portal of the latest updates in insurance and company updates. In addition, there is a link to the corporate knowledge module in line with an e-learning module where employees can participate in varied aspects of a virtual office. On click of the one button, employees can reach out to the virtual teams that they are members of. The virtual access also provides employees with updates on how the various projects of the company are progressing.

There are plenty of ways by which employers train their employees for ERP irrespective of the satisfaction of employees being low. Most systems of ERP are complex or confusing, and the possibility of users being frustrated with them exists. Employees feed data into the system, not realizing their fatal consequences. According to Felderer et al. (2016) to the content related to teaching are not so important as far as the final impact of training is concerned. ERP systems have various functionalities in the form of supplier relationship management, project life cycle or manufacturing that has specific uses. In addition to this, ERP systems are designed for specific industries. From the cost perspective, it depends upon the organisation where you intend to implement it. The level of customization, user fees along with the additional software or hardware needed to run it smoothly. From the cost point of view, the most important facet appears to the implementation or customization of ERP (Felderer et al., 2016). In certain cases, both these areas are so complex that it overruns the cost of the software itself. Sometimes the organisation may voice their desire to outsource their ERP needs to some outside agencies. The organisation is more concerned about the single cost of ownership. In addition, the cost of integration, along with training, is included as well. Since it is a strategic and complex acquisition, the choice of the vendor needs to be exercised properly. They need to possess the relevant experience along with skills in handling a project of such magnitude. Apart from this, their goodwill in the market has to be superior so as to maintain confidentiality in the implementation of the ERP project.

With ERP systems, there is a business system in focus. The database modules are designed on a complete set of core functions rather than the transaction moving from department to another. Studies also inform that the support of the senior management is very important and therefore should not be overlooked. This is an important decision which the executive has to make. With the implementation of an ERP system, the new

risk could emerge and alter the risk-bearing capacity of an organisation as well (Upadhyay et al., 2011). With control or risk mechanisms, a definite framework is in a place where application security, conversion controls, along with project management, have a definite control. The framework of COBIT can address the multiple issues of the management by bridging the gap between technical issues, control needs and risk. With the aid of the system, things can be addressed when they go wrong and figure out the problem areas. To reduce issues with training programs, most of the ERP training companies have gone on to formulate internet-based training programs for various organisations in diverse locations. With the internet-based system, these companies have gone on to reduce training costs whereby increasing the efficiency of the employees. ERP is still evolving; it would mean adapting to the dynamics of the market or developments on the technological front. In the evolution of ERP, web-enabled software pertaining to ERP is important. It is possible to integrate the software with the various application programs and at the same time modifications to the business process can be achieved.

2.6 Conceptualization of ERP Training Methods

According to the study of Noudoostbeni et al. (2010), identifying the correct training model is also important for the successful implementation of ERP. The training model includes an effective training method that allows the staff to gain knowledge about utilising the system in an effective and correct fashion. ERP training system has found to be most effective for preparing the employees for ERP adoption. Study of Hu (2014) also informs about the awareness towards the necessity of training and adoption of ERP. Through training, employees can be effectively-prepared and made aware of the significance of adopting a new system (Rajan and Baral, 2015). Therefore, the studies have identified the "ERP Software Training" as an important tool for the successful implementation of the ERP system. ERP Software Training can be effective in avoiding costly errors (Rajan and Baral, 2015). The perceived risks could also be associated with the perceived usefulness of the new technology. The perceived usefulness of ERP is influenced by the personal behaviour and attitude of the individuals towards acceptance of ERP. Perceived usefulness and positive attitude towards the adoption of ERP can be developed through educating and training the employees (Al-Jabri and Al-Hadab, 2008). According to the study of Lee et al. (2010), training about the ERP system and its use

helps in reducing employee stress and anxiety and also helps them to learn about the benefits of the ERP system.

2.6.1 Change Management Training

Change management is very important or implementing and adopting a new system like ERP. Change management training could include strategies such as knowledge formation, system awareness, user feeling and system benefits (Umar et al., 2016). Another important form of training that could be provided to the employee, in order to reduce the effect of perceived risks and improve the rate of technology adoption is "Technology training". ERP system is very complex and would require special technical skills to work on the system effectively. The complex nature of ERP can lead to a problem if the employees are not trained to adopt new technology (AlBar and Hoque, 2015). Therefore, technology training of the employees can also reduce the perceived functional, social, time loss, financial and other risks. This research will specifically look at usage training, i.e. the training towards utilising the ERP system in the context of an individual's job.

Vayyavur (2015) informs that with the ERP implementation within the organisation, the ways in which the organisations work and function are significantly changed. However, with ERP adoption planning, forecasting and decision making is also improved. However, managing such changes is very difficult for organisations. The major changes occur in the culture of the organisation. Since ERP systems implement new processes and logic in the organisations, this may cause various cultural conflicts within the organisation. Vayyavur (2015) identifies that "*Cultural changes are the most sophisticated types of changes to identify and manage because the culture is complex to grasp. The organisational culture reflects the implicit beliefs, values and assumptions about the behaviours believed to lead to success*" (p. 2763). During the implementation of the ERP system, the existing culture within the organisation can be contradicted with the desired forms of organisational structure, forms of control and implementing the optimal process can become difficult. The study conducted by Sia et al. (2002), has informed that ERP implantation can result in enforcing additional management power and may not introduce organisational empowerment (as cited in Vayyavur, 2015). The internal power structure that can be exaggerated by the ERP system implementation or system introduction within the organisation could significantly result in user resistance. Therefore, studies have

informed that the ERP system could be a change agent, which requires an effective focus over the change management strategies and employee training. The ERP systems often fail due to the absence of the organisational and managers' efforts.

However, the main focus of change management is on obtaining the right results within the correct time frame and appropriate cost. The resistance to change is often a major challenge, which is often addressed through the effective management and training related to promoting adaptive and flexible structure, focusing on human resources, enhancing user's familiarity with technology and enhancing communication skills (Law et al., 2010). Change management strategies are more focused on addressing the challenges that could affect the financial success of the business or can result in cost and time overrun. However, very less focus is placed on understanding the perception of the employees and developing the training strategies that could influence user perception and can reduce the level of perceived risks. The strong communication mechanism is the main requirement of the change strategies, which could make the organisational structure more flexible. Yet, greater education and training of the employees is significant for developing a positive attitude and motivate them to adopt the new system. The literature displays a gap in providing the evidence regarding the type of training and education that can be developed under change management for influencing the perception of employees (Law, Chen, and Wu, 2010).

2.6.2 Traditional Training Methods

The study of Dorobat and Nastase (2012) identified that there are various traditional training methods that are utilized by the organisations for the ERP system implementation and utilization. The traditional training methods include interactive training manuals, tutorials, courses, resident experts, help components, as well as computer-based training method (CBT), which are considered as very effective in training the employees for successful implementation of ERP system (Dezdar and Ainin, 2011). Dorobăt and Năstase (2012) have also identified the 26 training methods that can be utilized by the organisations for effective ERP implementation and support. These training methods include "*classroom instruction, print-based material, e-learning (asynchronous), conference calls, e-mail, in-person mentoring tutoring, online assessment and testing, online references, e-learning (synchronous), simulations, portals, video broadcasts,*

learning management systems (LMS), learning content management systems (LCMS), knowledge management systems (KMS), instant messaging, online mentoring tutoring, electronic performance support systems (EPSS), games, communities of practice, wiki, virtual laboratories, chat rooms, mobile learning, blogs, podcasts" (p. 624-625). Dorobăt and Năstase (2010) have also analysed the diversity of the various traditional training methods on the basis of five main perspectives-retention, flexibility, availability, investment, expandability. However, it has been identified that traditional training methods are less flexible and also costlier in comparison to some newer methods of training, such as the use of computer-based training etc. In the traditional training methods, the print material, courses and modules and classroom training were generally done (Karrer, 2008).

2.6.3 Mental Model and Training Strategies

Badewi and Shehab (2016) have defined mental model as "*a representation formed by a user of a system and/or task, based on previous experience as well as current observation, which provides most (if not all) of their subsequent system understanding and consequently dictates the level of task performance.*" (p. 89). According to the study of Cesarini and Gunnarsson (2014), mental models are considered as the perceptions and assumptions that are held by the employees. By understanding the mental models and by being aware of the stated and unstated rules that influence the individual behaviour and decisions, new rules can be developed that would help the employees to develop a positive perception towards ERP implementation. A study conducted by Coulson et al. (2003) has based their research framework on the mental models and the training strategies that could be effective for the employee adoption and acceptance of ERP. The mental models have been a significant topic of research in the field of cognitive psychology. The mental models help to explore the mental process of the employees of technology acceptance and domain knowledge and the training methods that are based on identified mental models influence the behaviour of the employees and make ERP implementation successful (Badewi and Shehab, 2016). Badewi and Shehab (2016) inform that understanding and adopting the correct mental model of the system is a very important component, as it can help in achieving the desired outcomes of training.

This model informs that prior knowledge of the individuals is highly significant in influencing their perception and performance and forming the mental model towards the system. The mental model can also be considered as the way individuals perceive or understanding things. This can also be associated with the perceived usefulness and perceived ease of use that influence the risk perception of the individuals. Therefore, the development of the positive mental models can significantly help in reducing the negative perception of the employees and can help in improving their system acceptance and adoption by reducing user resistance (Grabski et al., 2011). Zhang and Xu (2011) have also informed that building mental models enable the users to apply their knowledge and reform their understanding to use the new technology. The study has also informed that mental modelling helps the employees to acquire new knowledge. The training provided for the development of the mental models affects the user perception about the new system, which in turn also affect the user intentions and influence them to use the new system (Zhang, and Xu, 2011).

Researchers have identified that effective training strategies that convey the appropriate content can result in the development of accurate and positive mental models. However, mental modelling is also based on traditional ERP training (Zhang and Xu, 2011). Ghosh and Skibniewski (2010) that the traditional training method, are significantly effective in conveying the system knowledge and understanding and therefore, considered as the most common ERP training technique. The training strategy framework based on mental modelling comprises of the vendor-supplied ERP training and focuses on the three different levels of knowledge-command-based, tool procedural, and business procedural. The procedural training is focused on carrying out different tasks, and the content is offered in the sequence, in order to inform the users about the collection of the rules and steps of using the new ERP system ((Zhang, and Xu, 2011; Ghosh and Skibniewski, 2010). The conceptual content model has been identified as another important approach for enhancing the knowledge and understanding of the employees towards the system.

However, there are many limitations to this training system. The mental modelling is mainly focused on developing the knowledge regarding the new system, and lack of focus is placed on the perception of risks of the employees for successful implementation. Even after the mental modelling of the employees, the training may or may not reduce the perceived risks among users. For the complex and integrated nature of the ERP system,

such a training method may not be sufficient for the organisations in the current market needs (Badewi and Shehab, 2016).

2.6.4 Training program for ERP

This research specifically looks at training towards controlling and managing outcomes as research suggests that people tend to resist adopting changes which may lead to negative outcomes. In this respect, this research will specifically look at the usage training, i.e. training program aimed at understanding how to use the system. Such training is aimed at not only improving people's perception and attitude towards the new system but also improving the user acceptance of the ERP system. This section will provide information regarding the training program that can be used.

The study conducted by Jehanzeb and Bashir (2013) has focused on exploring that training programs and their benefits for the employees and organisations. There has been a significant discussion among scholars about the effectiveness of the training programs and their impact on achieving organisational and employee objectives. The studies have informed that training can be significant for employee retention and also for reducing employee resistance towards adopting new technology at the workplace. Training programs are mainly focused on influencing the individual performance and perception of the employees. The perception of the employees towards new technology is often negative because of the perception of various unseen risks and the risk of getting personal performance affected. The perceived usefulness and the perceived ease of use of the new system are highly significant in influencing the user perception towards their own performance. Training programs focused on improving and enhancing the skills and knowledge of every individual and view every individual as an important part of the organisation. For the ERP adoption and implementation as well, the perception of every employee is important, as according to the Theory of Reasoned Actions (TRA), the subjective norms have the potential to influence people's perception and intentions. Therefore, positive perception and attitude of every individual is significant for the successful implementation of ERP.

Therefore, it has also been identified that ERP system implementation and employee training are a very complex phenomenon. Moreover, modern organisations are focusing on enhancing their abilities and motivate their employees to enhance their performance

for achieving competitive advantage in the market. Therefore, training and development programs are highly significant, as the ERP adoption and implementation could not be successful with employee training without focusing on their individual development. According to Jehanzeb and Bashir (2013) "*Training is an organized method of learning and development which expand the efficiency of the individual, group, and the organisation. Development mentions the accomplishments leading to gaining of new abilities and skills for the personal growth of employees*" (p. 244). According to these definitions, training can be highly significant for improving the knowledge of the employees towards ERP system and to some extent can reduce the level of the perceived risks of being affected by the new system. However, development is an important individual process, which allows the employee to enhance their personal skills, abilities and capabilities that would positively enhance their personal performance (Ke and Wei, 2008). However, the gap has also been identified regarding the focus being placed on training both for improving employee skills and performance and attitude for ERP adoption.

One significant aspect of the evidence that has been identified in the literature is about the cultural influence over the perceived behaviour and thinking of individuals. Abbasi et al. (2015) have identified that individualistic culture displays a more positive perception towards technology acceptance, as in such culture, individuals are more focused on their personal performance and personal skills enhancement. Though it is not possible to reject the influence of the national culture on employee's attitude behaviour and values, yet an individualistic culture can be developed within the organisation, through which employees can be motivated to focus on their personal development (Alomary and Woollard, 2015). Research informs those behavioural intentions of the employees are influenced by the two main determinants; firstly, it is the personal attitude of the individual that shapes their behaviour and second is the social pressure that influences people and their perception towards accepting or rejecting technology (Alomary and Woollard, 2015). Training programs can address both of these determinants. The training program can influence the personal attitude of the employees that can motivate them to adopt new technology and participate in its successful implementation. Secondly, development strategies can reduce the negative impact of the subjective norms or social pressure and motivate individuals to work towards personal performance and skills enhancement.

Training programs can reduce the effect of negative social pressure (Marangunić and Granić, 2015). One important finding of the TRA model is that it believes that people often behave in a rational manner, which means that people evaluate the conditions and their own actions in order to understand that what could be the benefits or the loses of their own actions, which encourage them to have perceived behavioural control. The evaluation of the conditions and personal actions influence people to control their behaviour and develop intentions that could help in taking positive actions (Alomary and Woollard, 2015). Training as well as the development program is, therefore, significant in helping employees to evaluate the manifestations of their actions and can encourage them to improve their skills to understand and accept the ERP system (Saks, 2015).

Chavan (2017) has informed that the most significant and important parts of the appropriate employee training are the construction on orientation, improving operational skills of the employees and management skills. These theories associated with employee training are mainly grounded in the employee development program. Therefore, with effective training, development of employees is also important for adopting the new system and having positive perception towards ERP system. The training programs are required to include the core competencies and appropriate structure through which the organisation can implement a new system (Chavan, 2017). Therefore, the basic function of the development theories is to enhance cooperation among users, enhancing knowledge gain, promoting innovative thinking and also enhancing problem-solving skills. These skills or competencies are highly important for the employees for ERP adoption. These skills will help the employee and will reduce the perceived risk of losing a job, the risk of labour substitution, fear of having inadequate skills and being replaced by more skilled professionals, the problem of high uncertainty avoidance etc. (Seymour, and van Vuuren, 2014). The rough effective training, employees can learn about the benefits and gains of the ERP system and its implementation in the organisation. It is important that employees are convinced about the perceived benefits of the new system, as it helps in making the implementation process easier.

Chavan (2017) has also identified that training programs are an important framework that helps employees to develop personal and organisational skills. Training has been considered as the acquisition of the knowledge, skills and attitude that could relate to important competencies. Training programs are also the organized procedures, through which users or the employees within organisations are provided with knowledge and

encouraged to enhance their skills and change their attitude according to changing the organisational culture (Chao, 2014). Training programs are considered as the most appropriate procedure that helps the organisations to deliver their mission and objectives regarding the new system adoption and implementation and support the employees to learn about the organisational culture and change. Adoption of the new technology in an organisation requires companies to provide technical training to the employees. Literature has informed that technical training provided to the employees before implementing the new system helps in improving the perception of the employees towards their performance and also enhances their job satisfaction. The training helps the employees to adapt to new cultural change that would affect their work practices and functions and reduce their resistance towards technology acceptance (Ghobakhloo et al., 2012).

Having the sound knowledge and skills to perform the job helps in reducing the anxiety of the employees towards the new system and also reduces the fear of labour substitution. There are some significant and important components of the training program that are required to be addressed for effective ERP implementation. Jehanzeb and Bashir (2013) inform that a perfect training program should be a mixture of goal setting, knowledge acquisition and career development, as these approaches are very beneficial and useful for both, employees and organisation. According to these components, it is the responsibility of the organisation to ensure that employees have the skills, capabilities and knowledge of the new ERP system before that system is completely applied (Jehanzeb and Bashir, 2013). This will help in reducing user resistance that occur due to the perception of different risks. Job insecurity is an important perceived risk that employees often have when they are exposed to a new system or technology at the workplace (Khaparde, 2012). Job insecurity increases the end user's anxiety and uncertainty about the new system. Therefore, the appropriate career development opportunity that is offered through the training program can help the employees to understand that significance and benefits of ERP system (Kapp et al., 2016). The employees may perceive that their current skills and knowledge may not be appropriate or enough for adopting and using the new ERP system. Therefore, they may find their position to be vulnerable, that results in many perceived risks (Johansson and Ruivo, 2013).

User adoption of ERP is significantly influenced by the perception of the risks involved, and this perception could be different from person to person. Therefore, the training

program can addressee such perception risks on various stages. Training programs are based on an analysis of the existing business process and requirement of the technical foundations. Through this analysis, the organisations get an opportunity of understanding the various reasons that could lead to user resistance and helps them to develop the strategies to work against such reasons. Hameed (2014) have identified that when the training programs are offered to employees, they help in providing additional education, skills and knowledge to employees. This additional knowledge encourages the employees to positively perceive the organisational change.

2.7 Literature summary and research gap

ERP implementations are considered to be high-risk projects (Miller, 2019; AlBar and Hoque, 2015), and a number of ERP project fail to achieve most of their objectives (Hou, Chen and Shang, 2016; Weng and Hung, 2014; Al-Turki, 2011; Lee, 2010; Motiwalla and Thompson, 2009). One of the key factors affecting the poor success rate of ERP projects is the low level of employee adoption of ERP (Hou et al. 2016; Matende and Ogao 2013; Al-Turki, 2011; Pan et al. 2011; Kronbichler et al. 2010; Lee, 2010). For example, employees may continue to use the legacy system or approach or at best a hybrid approach, not making full use of ERP (Ozkan et al., 2015). Ali and Miller (2017) argue that the success of ERP projects depends significantly on employee adoption. Authors such as AlMuhayfith and Shaiti (2020), Chofreh et al. (2018), Pecherskaya et al. (2018) and Eid and Abbas (2017) contend that past researches have not sufficiently addressed the human factors affecting ERP adoption.

Some authors suggested that an individual's readiness to change is as critical as organisational readiness to change for successful implementation of ERP (Harun and Mansor, 2019). Past research has focused on the CSFs affecting ERP implementation (Albar and Hoque, 2015) but have paid insufficient attention to barriers affecting adoption of ERP such as perceived risks (Miller, 2019; El Hamdi and Abouabdellah, 2018; Hou et al. 2016; Pan et al. 2011). Researchers have stated that perceived risks might affect employees' adoption of ERP (Miller, 2019; Hou et al. 2016; Akkirman and Harris 2005) but the relationship between the two have not been empirically tested. Some authors indicate that due to the high uncertainty avoidance culture of Saudi Arabia (Hofstede, 2017), there is a higher likelihood of rejection of new technologies (Abdulah, 2016; Eid, 2011). ERP adoption requires high-level changes in which the way the workforce

functions and consequently faces even more barriers in user participation (Miller, 2019; Santos et al., 2018).

Researchers have overwhelmingly supported the view that consideration of human aspects such as developing right skills through effective training of employees is useful for ERP implementation (Kiran and Reddy, 2019; Menon et al., 2019; Hou et al. 2016; Son et al. 2012; Waiel et al. 2012). In other words, it is essential to evaluate the readiness of employees and invest in improving this readiness before implementing complex technologies (Phaphoom et al. 2018). While Alshare et al. (2019) conclude that reducing perceived risks of employees will improve their adoption of ERP, and recommend finding ways to lower employees' perceived risk in ERP adoption. They, however, have not talked about ways in which employees' perceived risks can be lowered.

Alshare et al. (2019) state that employee education and knowledge about the new system reduce their perception of risks towards the system. They, thus, recommend using training for reducing employees' perceived risk of the system. Son et al. (2012) also suggest that organisations can improve adoption of ERP by meeting employee needs of training and technical supports. While some past researchers argue that using training can improve adoption of ERP, they have not determined the exact process of using training to reduce perceived risk and improve adoption. Identifying this exact process is useful in order to be able to design the right training, which will be most effective in improving employee adoption of ERP. In other words, while this connection has been argued upon but past researchers have not empirically tested this relationship, and consequently there is no consensus on the type, timing and design of training program for successful implementation of ERP. My research aims to fill this research void.

Following table maps literature gap with research questions

Table 3 Research gaps and corresponding research question

Research gap	Research question
Several researchers (such as, Miller, 2019; Hou et al. 2016; Akkirman and Harris 2005) state that perceived risks might affect employees' adoption of ERP (Miller, 2019; Hou et al. 2016; Akkirman and Harris 2005) but they have not empirically tested the relationship	How do the perceived risks affect employees' adoption of ERP in Saudi large-scale organisations?

between the two. Miller (2019) and Santos et al. (2018) argue that since ERP involves high level changes in organisational functions and activities it involves high level of perceived risks which may cause higher levels of rejection of ERP. Such risks can be even more critical in countries like Saudi Arabia due to their high uncertainty avoidance culture (Hofstede, 2017; Abdulah, 2016; Eid, 2011). Abdulah (2016) investigated impact of perceived risks in adoption of e-banking in Saudi Arabia and found the causal relationship between the two statistically significant. Miller (2019), El Hamdi and Abouabdellah (2018), and Hou et al. (2016) argue that past research has paid insufficient attention to barriers affecting adoption of ERP such as perceived risks and they recommend additional research into the subject. However, none of the past researchers have investigated the impact of perceived risks on employees' adoption of ERP in Sadi Arabia.	
Alshare et al. (2019) conclude that reducing perceived risks of employees will improve their adoption of ERP, and recommend finding ways to lower employees' perceived risk in ERP adoption. They, however, have not talked about ways in which employees' perceived risks can be lowered. Most researchers (such as, Kiran and Reddy, 2019; Menon et al., 2019; Hou et al. 2016; Son et al. 2012; Waiel et al. 2012) agree that developing right skills through effective training of employees is useful for ERP implementation. Alshare et al. (2019) argue that improving employees' education and knowledge about the new system is likely to reduce their perception of risks towards the system. Phaphoom et al. (2018) suggests that training	Does training reduce employees' perception of risks in adoption of ERP in Saudi large-scale organisations?

helps in improving employees' readiness for the changes that the new system brings. They, thus, recommend using training for reducing employees' perceived risk of the system. Eid and Abbas (2017) and AlMuhayfith and Shaiti, (2020) also posit that user acclimatisation through training is the key missing piece in the puzzle for ERP success as it reduces employee resistance. However, their focus was mainly on small and medium enterprises which are somewhat different from large scale organisations in terms of organisational culture. Most of the researchers argue that training can be used to lower perceived risks but none of the past researches have looked at using training to lower perceived risks in ERP. Miller (2019), El Hamdi and Abouabdellah (2018), as well as El-Masri and Lane (2019) argue that investigators should consider using training to lower the barriers to adoption of ERP. AlMuhayfith and Shaiti (2020) argue that investigators should look at using training to resolve factors that affect ERP users.	
Eid and Abbas (2017) contends that acclimatising users through training can be effective in improving employee usage of ERP. They thus recommended studying the use of training in improving adoption of ERP. AlMuhayfith and Shaiti (2020) also contend that ERP training can be useful in improving usage of ERP but do not talk about what kind of training be useful in improving adoption of ERP. Son et al. (2012) also suggest that organisations can improve adoption of ERP by meeting employee needs of training and technical supports. Past researches have talked about using training to improve adoption of ERP but they have failed to address the issue that lack of training is	How can training improve employees' adoption of ERP in Saudi large-scale organisations?

not the major issue in this case, the real issue is the lack of adequate training. Consequently, they did not pay sufficient attention to the quality/type of training that can be used to improve adoption of ERP.	

2.8 Initial conceptual framework

The purpose of the conceptual framework is to identify the effect of culture and training on the perceived risks in the adoption of the ERP system and the influence on employee adoption. The main factor that can lead to success or failure of the ERP system is the perceived risks. The conceptual model has been developed on the basis of the evidence gathered through a comprehensive review of the literature. Figure 2 below shows the conceptual framework for this research

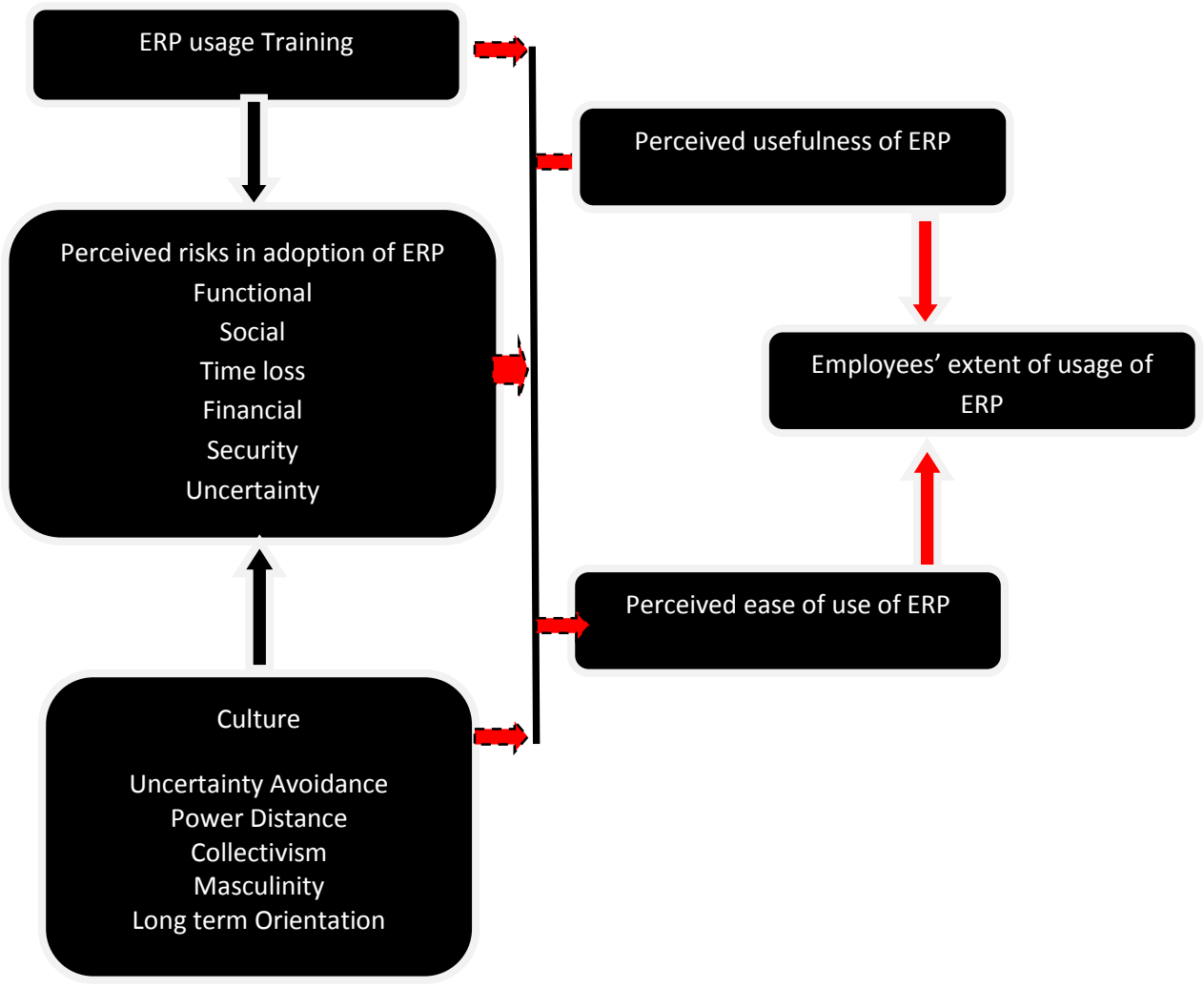

Figure 2 Initial conceptual framework

Three important themes have been identified from the literature; perceived risks in the adoption of ERP, the impact of national and organisational culture on perceived risks and adoption of ERP and the impact of training on the adoption of ERP system. Therefore, this conceptual framework informs that perceived risks and culture are correlated to the adoption of ERP system in an organisation, whereas training can be used to improve user adoption rate and to reduce perceived risks that pose a barrier in adoption and implementation of ERP system.

Chapter 3: Data and methodology

3.1 Introduction

The previous chapter reviewed the literature on employees' perception of risks in adopting ERP as well as how training may be useful in acclimatisation, in reducing perceived risks and in improving adoption of ERP. This chapter details the methodology selected for this research. It lays out the choices that the researcher made in deciding the best tools and methods to collect and analyse data in order to answer the research questions.

3.2 Research Paradigms (Philosophy)

This research adopts both positivism and interpretivism and is be therefore broadly based on pragmatist philosophy which argues in support of the use of both positivism and interpretivism in order to find practical and meaningful solutions to real-life problems (Saunders et al. 2017). Both positivism and interpretivism have massive significance for this research.

Positivism was useful in identifying which particular perceived risks have a significant impact on the employees' adoption of ERP and to verify whether training can help in reducing perceived risks and improving the adoption of ERP. This however, limited knowledge because it only talked about the problem and likely solutions but did not shed enough light on the kind of solutions required to solve the problem. Interpretivism was considered useful in this research in two ways; firstly, it helped in understanding the underlying reasons why certain perceived risks play a more crucial role in influencing employees' adoption of ERP than other perceived risks. Secondly, interpretivism was useful in understanding how training practices can be designed specifically to reduce crucial perceived risks and what kind of training practices are most effective in this regard. Considering these arguments, both positivism and interpretivism have their benefits for this research, and consequently, this research adopted both positivist and interpretivist epistemologies.

On the positivist side, this research looks to definitely establish the relationship between perceived risks and users' adoption of ERP and between training and perceived risks in adoption of ERP among Saudi employees. Definitively establishing this relationship will

help in establishing the role of training in reducing perceived risks and consequently improving employees' adoption of ERP. On the interpretivist side, this research tried to find the key attributes that should influence the training strategy of an organisation in order to develop an effective training program to boost adoption of ERP.

While the research overwhelmingly supports the argument that training is essential for adequate implementation of ERP (Hou et al. 2016; Son et al. 2012; Waiel et al. 2012), the specifics of what this training should involve are still open to debate. There are several reasons such as time and resource constraints, additional pressure on employees etc. which make it difficult for organisations to have a very extensive training program for all the employees (Hou et al. 2016). Identifying the key obstacles in employees' adoption of ERP, which is a key success criterion for successful implementation of ERP as argued in the literature (Ali and Miller, 2017; Hou et al. 2016; Ha and Ahn, 2014; Al-Turki, 2011), will help us in carefully designing training programs which will help to overcome these barriers (Son et al. 2012).

One of the problems with past research has been that it somewhat ignores the invisible aspects such as perceived risks. While attention has been paid to identifying risks, little attention has been paid to identifying the perceived risks. This is probably because the impact of these perceived risks is not as observable or evident as other forms of risks (Abdulah, 2016). Perceived risks, however, are known to alter human behaviour and decision making and are, therefore, likely to affect people's response to the implementation of ERP (Pan et al., 2011). This research needs to definitely establish whether this assumption is true or not. Furthermore, it is essential to definitively establish whether training is a useful tool to overcome these perceived risks or not. Failing to do that might lead to training programs which may be aesthetically correct but provide no practical value in terms of returns on investment in training, a key investment criterion for most businesses worldwide.

Past research has been too simplistic in this regard. For example, simply establishing the usefulness of training programs in the successful implementation of ERP does not contribute significantly towards developing the right training program. This research takes a step forward and uses pragmatist philosophy in order to find a practical solution to a real-life problem, of improving a relatively lower adoption of ERP by employees.

The research onion below illustrates the stages considered when planning the research and how the different research philosophies relate to each of the stages.

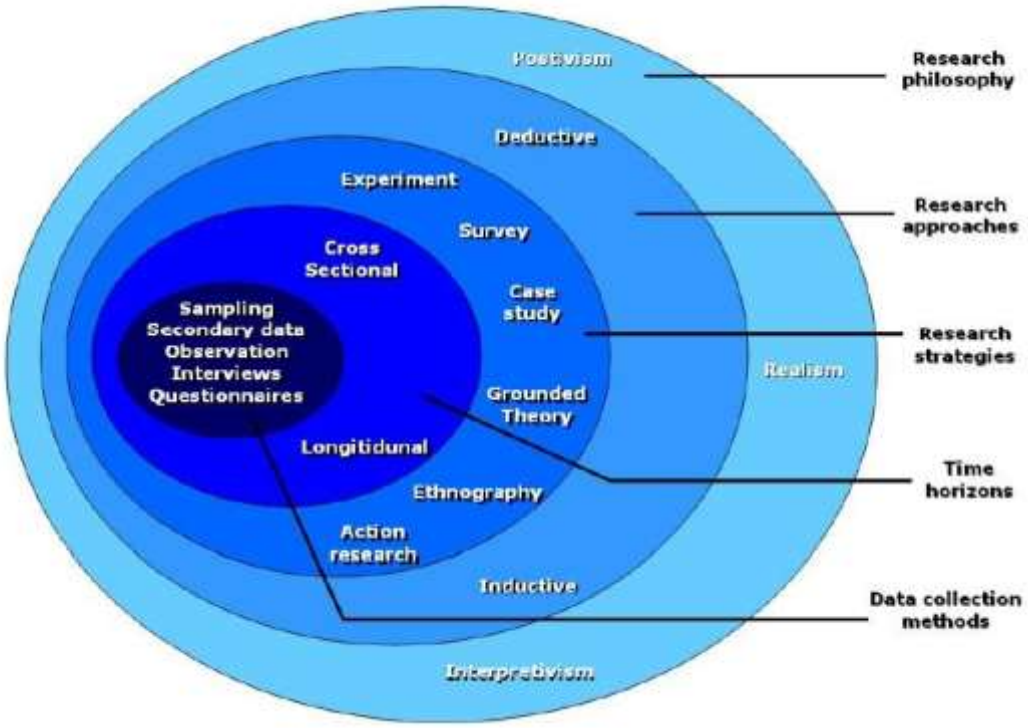

Figure 3: Research Onion (Adapted from Saunders et al. 2005)

3.3 Research approach

Decisions regarding methodological approach depend on the level of existing knowledge on the subject (Gabriel, 2013). If the research is only validating something that is already known, then deductive approach is considered suitable but if the research is looking to explore new knowledge then inductive approach may be more suitable (Gabriel, 2013; Trochim, 2006). This research contains elements of both. This research began with study of prior information on perceived risks and their impact on ERP adoption and how training can be useful in resolving the issue of perceived risks and lower ERP adoption by employees. This led to a novel conceptual framework. This framework was then tested in context of Saudi large-scale organisations using deductive approach. The research then reverted back to inductive approach to learn how to apply the knowledge from the deductive study in context of Saudi large-scale organisations by trying to explore ways in which training can be adopted to address the critical perceived risks in ERP adoption. This research, therefore, has a strong inductive element in addition to the deductive element. This research is, thus, abductive research as it combines both inductive and deductive approaches.

3.4 Research Strategy

Yin (2017) states that the target of any researcher should be to identify a research method that answers the necessary research question. Venkatesh et al. (2013) asserts that studies geared toward business and social research tend to use qualitative, quantitative, and mixed methods to obtain information.

Quantitative research, according to Van der Merwe (1996), is a research approach aimed at testing theories, determining facts, demonstrating relationships between variables, and predicting outcomes. Qualitative research, according to Van der Merwe (cited by Garbers, 1996) is a research approach aimed at the development of theories and understanding. Mixed methods research basically includes both qualitative and quantitative data collection and analysis in parallel form (Kemper et al., 2013; Burke and Onwuegbuzie, 2005). Mixed methods research is more than simply collecting both qualitative and quantitative data; it implies that data are integrated at some stage of the research process (Creswell et al., 2004). The underlying logic of the integration is that neither qualitative nor quantitative methods are sufficient in themselves to capture the trends and details of the situation; however, when used in combination, both qualitative and quantitative data yield a more complete analysis, and they complement each other Creswell et al. (2004).

The current research study requires generalisation because this research involves identifying the problem and solution at organisational levels. Implementation of ERP is an organisational level exercise, and it is difficult to implement it at the individual level. This is the reason why any implementation process, such as training must be considered at the organisational level. Thus, a quantitative study, which helps achieve generalisation, was essential. The purpose of this research is to provide general findings which are useful for all large-scale organisations and not for any specific organisation.

While generalisation is useful for this research, risk perception is a behavioural topic, and in past researches, how perception may affect behaviour and how perception could be managed are studied using qualitative methods. This research aims to identify the critical perceived risks in terms of influence on the adoption of ERP through quantitative methods. On the other hand, how these specific perceived risks could be managed through training so as to improve the adoption of ERP has been explored through qualitative methods.

This research is, therefore, a combination of both qualitative and quantitative methods and is, therefore, a sequential mixed methods research. This research is sequential because identification of critical perceived risks must be made before proceeding with identifying the ways in which training may resolve these perceived risks. The table below indicates the methods that were used to address each of the key objectives of the study, thereby linking the key study objectives to the methods. These methods are explained in detail in the next subsection.

Table 4 Methods used to address key study objectives

Objective	Method
1. To investigate if employees' perceived risks in using ERP affect their adoption of ERP.	To achieve this objective, both quantitative and qualitative methods were employed. a) Quantitative method; This approach enables clear investigation on whether there is empirical support for the argument that perceived risks can inhibit the adoption of ERP by employees. A structured questionnaire survey was conducted to gather responses on perceived risks and adoption of ERP which were then statistically analysed for empirical evidence. b) Qualitative method; This approach was adopted to learn more about why and how perceived risks may affect employees' adoption of ERP. As such, interviews with senior level executives since they are most knowledgeable about organisational level issues. They offer vital views on how organisation level policies may be designed to target the issue of perceived risks and ERP adoption. Thematic analysis was then used to analyse this qualitative data
2. To evaluate the impact of training on employees' perception of risk in ERP.	Quantitative method; This approach best investigates whether there is empirical support for the argument that training can boost ERP adoption by reducing perceived risks. A structured questionnaire survey was conducted to gather responses perception

	of the impact of training on different types of risks in ERP and its impact on the perception of risk and acceptance of ERP. The responses were then statistically analysed for empirical evidence.
3. To identify the attributes of ERP training that can make ERP training more effective in improving employees' adoption of ERP.	Qualitative method; In order to explore what possible training policies may be effective in this regard, qualitative strategy was considered essential for this objective. Interviews with senior level executives (due to their experience on organisational level issues) were adopted to learn about the specifics of training programs that may be useful in overcoming these perceived risks and improve adoption of ERP. It is not possible for organisations to develop training policies customised for each individual and hence top-level managers may have to evaluate the most suitable training program and then decide the adequate approach for their organisation

3.5 Quantitative method – questionnaire survey

Quantitative research involves evaluating a phenomenon based on statistics with an intent of testing a theory (Denzin & Lincoln, 2011). This approach relies on statistical data to validate or test theories as well as the relationship between the defined variables of a study (Fellows and Liu, 2015; Denzin & Lincoln, 2011). The methods are therefore designed to ensure objectivity, generalizability and reliability (Weinreich, 2009).

Since the objective of this research study involved examination of quantitative variables, it was necessary to use statistical data to create and test various models and hypotheses as well as association among these variables. Therefore, the quantitative method was adopted.

This study therefore involved conducting a structured questionnaire survey. This questionnaire was designed to investigate respondents' perception of the impact of training on different types of risks in ERP and its impact on the perception of risk and acceptance of ERP. Several reasons drove researcher's decision to adopt questionnaire survey for this research; such as ability to collect data anonymously from geographically dispersed and diverse set of respondents without the cultural, time, and location barriers. Since the questionnaire can be completed anonymously, allowing respondents to report their true and honest views without fear of shame or repercussions, it was deemed best for the study.

While there is anonymity in questionnaire surveys, this aspect also poses its own challenges because it is impossible to verify the responses. If the questions are ambiguous or unclear, it may lead to false responses. This, however, was managed through pilot surveys. Questionnaires are often structured, which means that they only provide restricted answers about the questions that the researcher seeks to answer. Hence, knowing the full scope and all aspects of the research topic is essential. This was done through an extensive literature review in this research. The findings of the questionnaire survey were also cross validated with semi structured interviews.

3.5.1 Questionnaire Review and Development Process

A questionnaire was developed based on the literature review and the conceptual framework. The key themes that the author identified are described in detail in chapter 2 and are shown in the conceptual framework. Questions for the questionnaire were obtained from literature sources and were adopted for this research. The table below lists the questions, and the sources the questions were obtained from;

Table 5 Questionnaire with sources

	Question	Sources
Performance risk	I am apprehensive that ERP may not deliver the expected standard of service.	Peng and Nunes, 2009; Abdulla, 2016
	Sometimes I feel worried that ERP may not produce the desired outcomes in my work.	Peng and Nunes, 2009; Abdulla, 2016
	Sometimes I am worried that I may not be able to do what I wish to do using ERP.	Peng and Nunes, 2009
	I have sometimes found problems in using ERP, such as system unavailability.	Peng and Nunes, 2009
Social risk	I think that I may lose the support of my friends/family members if I fail in achieving desired outcomes through ERP.	Abdulla, 2016; Matende and Ogao, 2013
	I think that with ERP, I will lose the opportunity to interact with other team members.	Tezeny, 2013
	I think that I will lose a valuable relationship with other staff (including the manager) if I use ERP.	Abdulla, 2016; Matende, and Ogao, 2013
	I think that I will not be able to ask anyone for help if I fail to use ERP.	Abdulla, 2016
Functional risk	I am unsure that ERP processes will take place as expected.	Sajjad et al., 2010 ; Azmi et al., 2010 ; Lu et al. 2006; Peng and Nunes, 2009
	I fear that ERP is not reliable.	Sajjad et al., 2010; Azmi et al, 2010; Peng and Nunes, 2009; Abdulla, 2016
	I am concerned that in ERP, I cannot verify if the transaction has been actually completed.	Peng and Nunes, 2009; Abdulla, 2016
Time loss risk	I am worried that with ERP, it will take longer for me to do my work.	Abdulla, 2016; Humayoun and Khan, 2010; Sajjad et al., 2010; Azmi et al., 2010
	I am sometimes worried that ERP transactions may take longer to process	Tezeny, 2013; Sajjad et al., 2010; Azmi et al., 2010
	I am worried that I will be unsure about how long it will take ERP to complete the process	Abdulla, 2016; Humayoun and Khan, 2010; Sajjad et al., 2010; Azmi et al., 2010
Financial risk	I am afraid that using ERP may cause my company or me some financial loss.	Johansson and Ruivo, 2013
	I find it risky to do process financial transactions through ERP.	Abdulla, 2016
	I think that learning how to use ERP can cause me financial loss	Johansson and Ruivo, 2013
Security and privacy	I am afraid that if I use ERP, my personal details will be stolen.	Johansson and Ruivo, 2013; Matende and Ogao, 2013
	I am worried that someone may access my personal/ professional information through ERP	Johansson and Ruivo, 2013; Matende and Ogao, 2013; Peng and Nunes, 2009
	I am concerned that if I enter incorrect details in ERP, I may not be able to change it	Im et al., 2008

	Sometimes I feel suspicious about the reliability of ERP system	Rajan and Baral, 2015
	News about ERP failure worries me that it may happen to me also	Johansson and Ruivo, 2013; Matende and Ogao, 2013
	I am worried that my ERP tasks may not be secure	Rajan and Baral, 2015
	I am concerned about how ERP stores my private information	Peng and Nunes, 2009, Abdulla, 2016
Psychological risk	I am worried that I may undergo stress if something goes wrong with ERP	Tezeny, 2013
	I am concerned about the stress that I might undergo if I cannot use ERP	Tezeny, 2013
	I think using ERP would lead to stress and/or anxiety	Tezeny, 2013
CI- Uncertainty avoidance	I am unsure of the reliability of ERP system	Abdulla, 2016
	I am concerned that the ERP system may not work as expected	Rajan and Baral, 2015
	I am concerned that I may not be able to use the ERP system as expected	Tezeny, 2013
	I am worried that I may not get the chance to rectify mistakes when using an ERP system	Tezeny, 2013
	I am worried that I may not understand how ERP works	Tezeny, 2013
	I prefer seeing things happening with my own eyes rather than electronically	Abdulla, 2016
	I prefer to make sure that whatever I have done has been done the way I wanted	Abdulla, 2016
	I fear that ERP does not allow me to control my activity like the old system	Tezeny, 2013
CI- Power distance	I am worried concerned that I may not be able to control the process/ job in ERP as I can do in the old system	Abdulla, 2016
	If it was in my control, I would not have selected ERP	Abdulla, 2016
	I feel that I am being pressured into using ERP	Abdulla, 2016
	I feel that I have no choice in using ERP	Abdulla, 2016
CI- Collectivism	I am worried that I will not be working in the same team if I use ERP	Tezeny, 2013
	I worry that I will not be able to interact with my colleagues if I use ERP	Tezeny, 2013
	I am worried about the lack of human interaction in ERP	Abdulla, 2016
CI- Masculinity	I am worried that I will have to compete against my colleagues if I use ERP	
	I am worried for my colleagues who will not be able to use ERP	Abdulla, 2016
	I am concerned that ERP will affect cooperation among my team members	
CI- Long term	I am worried that in long terms ERP will not provide desired results for me	Abdulla, 2016
	I think ERP will be replaced by other technology in future	Ha and Ahn, 2013
	I do not think that learning ERP will benefit me in future	Abdulla, 2016

Training	I received complete training for how to use ERP to my business activities	Rajan and Baral, 2015; Ali and Miller, 2017
	I think ERP raining was adequately timed by my organisation	Saleh et al., 2013
	With the training, I have gained a complete understanding of features, functions and abilities of the ERP system	Ha and Ahn, 2013; Rajan and baral, 2015
	ERP training was adequately designed to teach ERP to members of our organisation	Rajan and baral, 2015; Ali and Miller, 2017
	ERP trainers were knowledgeable and managed to train people in the best possible manner	Saleh et al., 2013; Rajan and baral, 2015
	I think ERP training was relevant for my job	Saleh et al., 2013; Rajan and Baral, 2015
	I think the training provided was of practical value for the trainees	Saleh et al., 2013
	I think that training made it easy for me to understand and use ERP	Ha and Ahn, 2013; Rajan and Baral, 2015
	Following the training, I feel confident in using ERP	Saleh et al., 2013; Rajan and baral, 2015
	ERP training taught me how to troubleshoot or seek support in using ERP	Ha and Ahn, 2013; Rajan and baral, 2015
Perceived Ease of Use of ERP	I think that ERP is easy to use	Rajan and Baral, 2015
	I feel comfortable in using ERP	Oldacre, 2016; Peng and Nunes, 2009
	I think ERP is easy to operate for me	Peng and Nunes, 2009
	I find it easy to get the ERP system to do what I want	Im et al., 2008
	My interaction with the ERP system is clear and understandable	Im et al., 2008
	I find the ERP system flexible to use	Im et al., 2008
	I think I can accomplish all tasks using ERP	Oldacre, 2016; Peng and Nunes, 2009
Perceived Usefulness of ERP	I think that ERP has improved my job performance	Oldacre, 2016
	I think using ERP in my job enables me to accomplish tasks more quickly	Rajan and Baral, 2015
	I think using the ERP system in my job improves my productivity	Peng and Nunes, 2009
	I think using the ERP system enhances my effectiveness on the job	Oldacre, 2016
	I think using the ERP has made it easier for me to do my job	Im et al., 2008
Employees	I use ERP for most of my business activities	Rajan and Baral, 2015
	I willingly try to learn and use ERP	Rajan and Baral, 2015
	I intend to use ERP for all tasks in future	Rajan and Baral, 2015

3.5.2 Translation into the Arabic Language

The questionnaire instrument was posted in both Arabic and English. English questionnaire instrument was translated into Arabic by the researcher and were double

checked for errors and consistency by two PhD scholars from researcher's contact list. This was then proofread by one bilingual professional proof-reader.

3.5.3 Sampling

In order to answer the research questions within the defined scope, it was not possible to collect data from all cases. Thus, there was a need to select a sample, which called for selection of an appropriate and favourable sampling technique. In general, sampling techniques are categorized into two major types; Probability and Non-probability sampling, which are highlighted below;

1. **Probability Sampling**

Here, every item in the population has an equal chance of being included in the sample and therefore the method is associated with quantitative research (Zikmund, 2002). Brown (1947) states that this type of sampling has the greatest freedom from bias although it is obviously expensive in terms of time and energy for a given level of sampling error. It is subdivided into the following techniques.

a) Simple random sampling

Here, basically every case of the population has an equal probability of inclusion in sample. However, Ghauri and Gronhaug (2005) state the following disadvantages associated with this technique;

i. A complete list of all units in the whole population is required;
ii. Where the units of a study are widely scattered, the method becomes very expensive.
iii. The standard errors of estimators can be quite high.

b) Systematic sampling

Here, every n^{th} case after a random start is selected. This has an advantage of simplicity.

c) Stratified random sampling

Here, the population is first divided into sub-groups and then a random sample is taken from each sub-group. This ensures that every sub-group is adequately represented (Ackoff, 1953). The technique is often used in cases of high variation within a population.

d) Cluster sampling

Here, the whole population is divided into clusters. Thereafter, a random sample is taken from these clusters, all of which are used in the final sample (Wilson, 2010). Davis (2005) states that this technique is advantageous for studies whose subjects are fragmented over large geographical areas since it saves time and money.

e) Multi-stage sampling

This technique involves moving from a broad to a narrow sample, using a step by step process (Ackoff, 1953). Its main purpose is to select samples which are concentrated in a few geographical regions because this saves time and money.

2. Non probability Sampling

Non probability sampling is often associated with case study research design and qualitative research. Yin (2003) states that the sample of participants does not need to be representative, or random, but a clear rationale is needed for the inclusion of some cases or individuals rather than others. It is subdivided into the following;

a) Quota sampling

Here, participants are chosen based on pre-determined characteristics so that the total sample will have the same distribution of characteristics as the wider population (Davis, 2005).

b) Snowball sampling

Here few cases are used to help encourage other cases to take part in the study, thereby increasing sample size. Breweton and Millward (2001) advise that this technique is best applied to small populations that are difficult to access due to their closed nature.

c) Convenience sampling

Here, cases or participants are chosen because they are often readily and easily available. It is therefore quite easy and cheap compared to all other techniques (Ackoff, 1953).

d) Purposive or judgmental sampling

Here, cases or participants are included in the sample because the researcher believes that they warrant inclusion. Hence, particular events are deliberately selected in order to provide important information that cannot be obtained from other choices (Maxwell, 1996).

For the quantitative part of this research study, the probability sampling technique was used in the form of cluster sampling technique. As indicated during the review of the various sampling methods, probability sampling ensures that every item in the population has an equal chance of being included in the sample and therefore it is perfect for quantitative research (Zikmund, 2002). During the initial planning stages of the research, the intention was to involve majority of the organisations from Saudi Arabia in the study. However, due to the size of the country, the time available to complete the research, and financial implications, the focus of the investigation was placed on large scale organisations. This enabled the sample size to be reduced. Four large scale organisations from Saudi Arabia were therefore selected to serve as clusters for this study. The total number of employees in these organisations was established to be 283,000. This big number meant that it was still not possible to involve every employee in the study.

Fisher (2007) estimated the target sample size based on population sizes and margins of error, as shown in the table below. This was used to determine the eventual sample size.

Table 6 Estimating margin of error by population size

	Margin of error			
Population	5%	3%	2%	1%
50	44	48	49	50
100	79	91	96	99
150	108	132	141	148
200	132	168	185	196
250	151	203	226	244
300	168	234	267	291
400	196	291	343	384
500	217	340	414	475
750	254	440	571	696
1,000	278	516	706	906
2,000	322	696	1,091	1,655
5,000	357	879	1,622	3,288
10,000	370	964	1,936	4,899
100,000	383	1,056	2,345	8,762
1,000,000	384	1,066	2,395	9,513
10,000,000	384	1,067	2,400	9,595

Source: Saunders et al. (2002: 156) quoted in Fisher (2007: 190)

From table 6 above, a sample size of 384 would be been sufficient or this research. The researcher sent out the questionnaire randomly to all the people working within these organisations.

3.5.4 Conducting the questionnaire surveys

The questionnaire survey was posted online on GoogleDocs and was kept open during January 2019 and March 2019. Respondents were sent reminders within a space of three weeks to complete the survey. Upon completion, the responses were downloaded in excel format and imported into SPSS for statistical analysis.

3.5.5 Data analysis

Data was first checked for missing values and outliers. Responses related to missing values and outliers were either removed or replaced with most suitable values as suggested by Hair et al. (2006).

This was followed by a frequency analysis of the demographic variables. This was useful to ensure that the sample was a good representation of the population and not biased as a biased sample may result in biased data.

This was followed by descriptive statistics such as mean, median and mode, which provide insight into the distribution of data. Mean and median were used to evaluate whether the responses were generally affirmative or negative while skewness and kurtosis values were tested to analyse normality of data (Hair, et al. 2003) which is a key assumption for regression analysis.

Regression analysis was used to establish a relationship between variables in this research. A number of authors have used regression analysis to study impact of perceived risks on acceptance of technologies. Sajjad, Humayoun and Khan (2010) used regression to analyse impact of Perceived Risk on Adoption of Technology using TAM model. Farzianpour et al. (2014) used regression to analyse impact of perceived risk on innovation adoption. Im et al. (2007) utilised regression to study impact of perceived risk

on users' acceptance of technologies. Rajan and Baral (2015) used ERP to study the factors that influence usage of ERP and its impact on end users.

Simple linear regression analysis was carried out to test the causal relationship between the variables. The following hypothetical models were developed based on the research hypothesis mentioned in the literature review;

$Perceived\_functional\_risk = \alpha_0 * ERP\_usage\_Training + \alpha_1 * Culture$..... Equation 1

$Perceived\_social\_risk = \alpha_0 * ERP\_usage\_Training + \alpha_1 * Culture$..... Equation 2

$Perceived\_TimeLoss\_risk = \alpha_0 * ERP\_usage\_Training + \alpha_1 * Culture$..... Equation 3

$Perceived\_financial\_risk = \alpha_0 * ERP\_usage\_Training + \alpha_1 * Culture$..... Equation 4

$Perceived\_security\_risk = \alpha_0 * ERP\_usage\_Training + \alpha_1 * Culture$..... Equation 5

$Perceived\_uncertainty\_risk = \alpha_0 * ERP\_usage\_Training + \alpha_1 * Culture$..... Equation 6

$Perceived\_usefulness = \alpha_0 * Perceived\_Functional\_risk + \alpha_1 * Perceived\_Social\_risk + \alpha_2 * Perceived\_TimeLoss\_risk + \alpha_3 * Perceived\_Financial\_risk + \alpha_4 * Perceived\_Security\_risk + \alpha_5 * Perceived\_uncertainty\_risk + \alpha_6 * ERP\_usage\_Training + \alpha_7 * Culture$..... Equation 7

$Perceived\_EaseofUse = \alpha_0 * Perceived\_Functional\_risk + \alpha_1 * Perceived\_Social\_risk + \alpha_2 * Perceived\_TimeLoss\_risk + \alpha_3 * Perceived\_Financial\_risk + \alpha_4 * Perceived\_Security\_risk + \alpha_5 * Perceived\_uncertainty\_risk + \alpha_6 * ERP\_usage\_Training + \alpha_7 * Culture$..... Equation 8

$Extent\_of\_user\_adoption = \alpha_0 * Perceived\_usefulness + \alpha_1 * Perceived\_EaseofUse$..... Equation 9

Where α_0, α_1, α_2, α_3, α_4, α_5, α_6, α_7 are coefficients of regression. These are the coefficients that were estimated using regression. In the case of a statistically insignificant relationship between variables, the value of the respective coefficient is zero. In the case of an inverse relationship, the value of the coefficient is negative, and in case of a direct and statistically significant relationship, the value of the coefficient is positive.

The present study used the 5% level of significance to reject the null hypotheses formulated at the start of the study. If the probability of the event occurring by chance alone was less than 5%, then the null hypothesis was rejected. Thus, the minimum level of significance was set at $P=0.05$.

One of the problems with linear regression is that it can only predict linear relationships. It was not considered to be an issue in this research because it is behavioural topic and considering that the responses were obtained based on a 5-point Likert type scale, the relationship between the variables is expected to be linear only.

Another limitation of linear regression is that the dependent variable must be continuous. In this research, the average of the responses for the dependent variables was continuous. Linear regression only considers the mean of the dependent variable and is quite sensitive to outliers. In this research the outliers are unlikely to have a significant impact because the scale was only 5 point. Even in case of outliers, the difference between limits and the outlier value was unlikely to be significant especially considering a large number of responses collected for this research.

3.6 Qualitative research

Worthen and Sanders (1987) define qualitative research as a strategy that utilizes the researcher as the main instrument in both the collection and analysis of data. The objective of this strategy is to promote better self-understanding and increase insight into the participants' perception (Taylor et al., 2015; Taylor et al., 2012).

This research does not merely identify the key perceived risks that affect the adoption of ERP in large scale Saudi organisations but in addition, also seeks to identify the kind of training policies that may be required to improve adoption of ERP. In order to explore what possible training policies may be effective in this regard, qualitative strategy as

considered essential for this research. Merriam (2014) supports this by suggesting that qualitative research offers the opportunity to use interview protocol and emerging technologies to gather information on evolving views.

Quantitative research investigates first whether there is empirical support for the argument that perceived risks can inhibit the adoption of ERP by employees and that training can boost ERP adoption by reducing perceived risks. While some researchers have also spoken about the usefulness of training for employees during ERP implementation (see, for example, Hou et al., 2016; Matende and Ogao, 2013; Son et al., 2012) but they did not explore sufficiently into what kind of training policies would be useful specifically for improving adoption of ERP. Furthermore, past researches have also ignored the cultural context of Saudi Arabia, which has a significant influence on people's perception of risks and consequently, their adoption of ERP (AlBar and Hoque, 2017). Many researchers have argued that ERP implementation should be contextualised according to the national and organisational culture (AlBar and Hoque, 2017). This research will further explore this perspective on the training aspect of implementation.

3.6.1 Usefulness of interviews

Interviews are commonly used to explore topics which are not sufficiently known as these allows researcher to directly engage with subject experts and extract the required knowledge (Easterby-Smith et al. 2015). Some of the topics are so novel that researchers even may not be aware what to look for and in such cases, they may seek guidance from the expert interviewees to guide the researcher. Depending on how much the researcher knows and how much he or she wants to know the researcher can decide the extent to which he/she wish to control the interview (Bryman and Bell, 2015). As a general rule, the lower the researcher's level of prior knowledge on the subject, the lower the researcher's control of the interview (Easterby-Smith et al., 2015).

In this research, the researcher knew the kind of perceived risks that may affect employees' adoption of ERP but was not fully aware of how these perceived risks affect the employees and what kind of training may be useful in overcoming these perceived risks so as to improve adoption of ERP. Hence the researcher adopted a minimum interference approach (This is where the researcher interfered respondents only if sufficient information had been delivered or if the researcher wanted to ask specific

question about what the respondent was communicating). Interviews were adopted in this research for two reasons. First, to learn more about why and how perceived risks may affect employees' adoption of ERP. Second to learn about the specifics of training programs that may be useful in overcoming these perceived risks and improve adoption of ERP. While individuals may be able to provide information on their own personal experiences in terms of perceived risks and how training might affect their own behaviour, organisational policies work at organisational levels. It is not possible for organisations to develop training policies customised for each individual and hence top-level manager may have to evaluate the most suitable training program and then decide the adequate approach for their organisation (Hou et al., 2016). Hence, the interviewees were aimed at learning from these senior managers how organisation level policies may be designed to target the issue of perceived risks and ERP adoption. Since organisations have few senior managers with the high-level information of such issues, the sample size was quite small for the qualitative part of this research.

For reducing any kind of research biases, the researcher used direct quotes from the interviews, which enhanced the validity of the findings and also showed that researcher had conducted effective interpretation of the data (Wengraf, 2001). Onwuegbuzie et al. (2009) comprised the interview process of four stages; developing the interview questions, collecting data, analysing the data and interpreting the data. These are discussed below

3.6.2 Question formulation

The interview process began with the researcher clearly explaining the purpose of the research. The findings of the questionnaire data were also mentioned but in a way that it would not influence respondent's opinion. Interview questions were formed to be direct so as to minimise the confusion in respondents' minds as to what information the researcher was seeking. Only one question was formulated for each construct and additional questions were asked when found necessary. The detailed discussion was carried out with every participant in order to obtain information regarding the type of perceived risk they experience and how such risks problems can be resolved through training and how ERP could be effectively implemented within organisations.

Respondents were told to use Arabic and English as they find comfortable as the researcher is bilingual in both Arabic and English. This was done to improve respondents' ability to express their views without being restricted by language. Respondents were advised at the time of consent that the interview will last between 60-90 minutes. None of the interviews lasted more than 60 minutes.

3.6.3 Sampling

For a qualitative research study, sampling is very critical since the target is to select interview participants, not to count or record the number of opinions (Taplay et al., 2014). Taplay et al. (2014) asserts that research studies, which hinge on identification of significant participants with experience on the research topic, are best handled using purposeful sampling. Padgett (2016) also reports that purposeful sampling is best for identification of whose knowledge would yield consistency of emerging themes.

Therefore, the qualitative aspect of this research study involved a purposive sampling of twelve stakeholders who met the study participant eligibility criteria as follows;

(a) A senior level executive from a large scale organisation operating in retail, manufacturing, petrochemical and hospitality sectors in Saudi Arabia

(b) had experience related to the successful ERP implementation at the firm

(c) had a willingness to volunteer to participate in a semi structured interview, and

(d) had the willingness to allow the publication of the collected data in my doctoral study and other publications.

Yin (2017) warns that the size of the qualitative sample is not as relevant as the ability to reach data saturation. Fusch and Ness (2015), also state that the researcher achieves an ideal sample size when data saturation occurs. Bernard (2013) advised that for qualitative research, a small sample size is adequate for reaching data saturation. Therefore, purposeful sampling of twelve eligible participants was done. They were later on interviewed to a point where no new emerging themes were obtained so as to ensure that data saturation had been achieved.

As a result, twelve senior-level executives from four different Saudi large-scale organisations operating in retail, manufacturing, petrochemical and hospitality sectors were selected for interviews. As mentioned before, senior managers are most

knowledgeable to provide organisational level knowledge of issues such as those discussed in this research. It is not easy to recruit senior managers for interviews due to their busy schedules. Thus, this part of the research relied on a small sample, making interviews the most suitable strategy for collecting useful data from them (Bryman and Bell, 2015).

3.6.4 Data collection

Interviews began with debriefing whereby the researcher introduced herself and explained the purpose of the research to the respondents. Then the researcher gave a brief overview of the findings of the questionnaire survey. This was followed by actual interviews where the researcher asked questions one by one covering each theme. Researcher adopted a minimum interference approach where by the researcher only interfered with the respondents if sufficient information had been delivered or if the researcher wanted to ask specific questions about what the respondent was communicating. All the responses were noted in shorthand and were transcribed later as also informed above. Appropriate follow-up questions were also used if more clarification was required. Interviews were manually analysed using the thematic analysis technique

3.6.5 Limitations of interviews

Lack of anonymity could lead some interviewees to give false information or hold back some vital information if they believe it may be embarrassing for them or their employer (Seidman, 2006). In this research, respondents were assured that their employer's identities would be completely confidential so no one would be able to relate back the information to them or their employing organisation.

Quality of interviews often depends on the quality of knowledge held by the researcher as it determines the kind of questions asked. In this research, the researcher developed prior knowledge through extensive literature review. However, the researcher ensured that her own knowledge of the subject did not influence the interpretation of the interview data. Researcher used direct quotes to provide support to her interpretation of the data.

Respondents were given freedom to select time and place for interviews and were informed that last minute changes were possible but not preferred.

3.7 Ethical Considerations

A couple of ethical considerations were duly made during data collection, data analysis and publication of this study including;

1) Ethical approval from the Plymouth University's Ethical Committee; Since this study intended to collect data from individuals, prior approval was required from the Plymouth University's Ethical Committee. The application and questionnaire were forwarded for ethical approval, and subsequently, such approval to conduct the survey was obtained.
2) Full disclosure of the study aims and objectives was clearly done prior to collection of data from all the participants.
3) It was vital to keep the identity of participants anonymous and confidential. The assurances for this extended beyond protecting just their names to also include the avoidance of using self-identifying statements and information like addresses and birthdates. By doing so, the participants were protected from any potential harm and their privacy was guaranteed. This was achieved using an informed consent document confirming that aspects of anonymity and confidentiality had indeed been explained to them and be assured of the level of privacy that the study in question upholds. This ensured that participants were more comfortable to partake in the study due to the assurances on confidentiality and anonymity. completing a survey or participating in an experiment or interview if they have some assurance that the researcher will not reveal the information provided.
4) The participants were also duly informed of their right to withdraw from the study at any time, should they feel the need to do so.
5) During the reporting stage, efforts were taken to properly reference and cite all consulted documents to the required standards so as to mostly avoid plagiarism.

Chapter 4: Quantitative Data Analysis

In the previous chapter, the researcher presented the research methodology and methods employed to achieve the research's objectives and questions. For this chapter, the statistical analysis methods, using SPSS software, for this quantitative research were used to answer the research's questions. This chapter begins with a discussion of the distribution of respondents according to some characteristics (such as age, gender, current position and work experience) that may affect their responses. This was done using pie charts. This is then followed by a discussion of the statistical tests for reliability of the scale. Exploratory Factor Analysis (EFA) was carried out to test whether the questionnaire instrument was reliable and internally consistent. Finally, regression tests are discussed. Three regression tests were conducted one each with perceived usefulness of ERP, Perceived ease of use of ERP and Employees' extent of usage of ERP as dependent variables. Tests for confirming the validity of regression results such as normality, heteroscedasticity, multi-collinearity are also discussed in this section.

4.1 Demographics

Before analysis of the data, it was essential to evaluate the distribution of the data. Biased samples can lead to biased results, and it was essential to see if the sample had an accurate representation of the population. In this respect, it was essential to establish if the sample was well distributed according to different measures such as demographics.

4.1.1 Age

Age was an important criterion because younger people tend to be more tech-savvy and hence are more likely to register different responses as compared to older and more experienced individuals who may be more inclined towards the legacy systems. As shown in figure 4 and Table 7, almost half of the respondents were in the 31-45 age group. This group represents young workers who are also the set of respondents most likely to fit the sample profile. 35.8% of the respondents were from the 46-55 age group, and a further 6.3% in the over 55 age group.

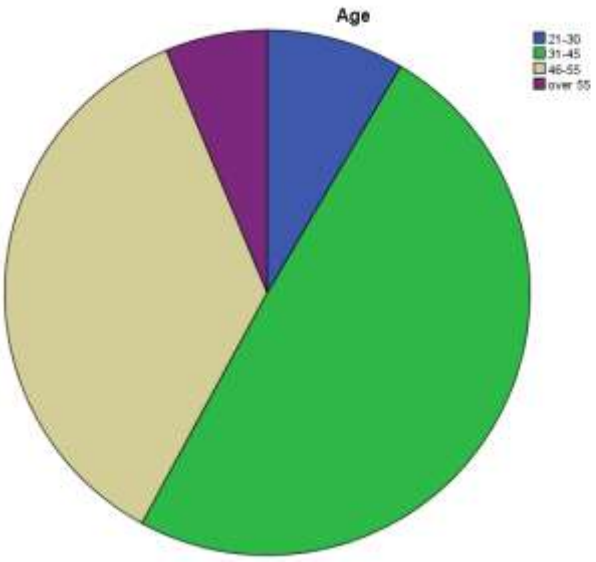

Figure 4 Pie chart of distribution of respondents by age

Table 7 Frequency of distribution of respondents by age

Distribution of respondents by age		
Age group	**Frequency**	**Per cent**
21-30	31	8.50%
31-45	181	49.50%
46-55	131	35.80%
over 55	23	6.30%
Total	366	

Most of the people who participated in the survey are middle-aged, and this is useful for this research because this research is primarily aimed at uncovering the responses of the employees. Middle and young aged individuals are most likely to comprise this group because as people get old, they tend to rise to higher positions.

4.1.2 Work Experience

Another key factor in evaluating the suitability of the sample was the work experience of individuals. Often people with higher work experience are likely to favour legacy systems because of their familiarity with the systems.

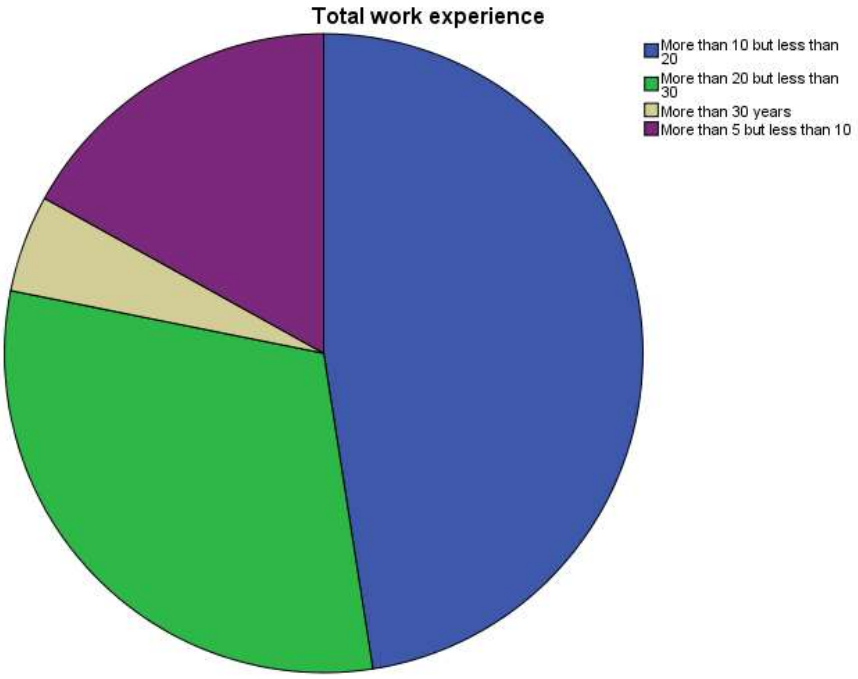

Figure 5 Pie chart of distribution of respondents by work experience

Table 8 Frequency of distribution of respondents by work experience

Distribution of respondents by work experience		
Age group	**Frequency**	**Per cent**
>5 years	0	0.0%
5-10 years	62	16.9%
10-20 years	174	47.5%
20-30 years	18	4.9%
>30 years	112	30.6%
Total	366	100.0%

According to Table 8, none of the respondents had less than five years of experience. 17% of the respondents have between 5 and 10 years. Most of the respondents (47.5%) had between 10 and 20 years of experience. Almost 40% of the respondents had more than 20 years of experience. According to this distribution, the sample seems to be a good representation of people with different levels of experience.

4.1.3 Current position

In terms of the current position, as shown in table 9 and figure 6, 8.5% of the respondents were for lower management positions while more than half of the respondents (57.4%) were from middle management positions. One-third of the respondents were from senior management positions

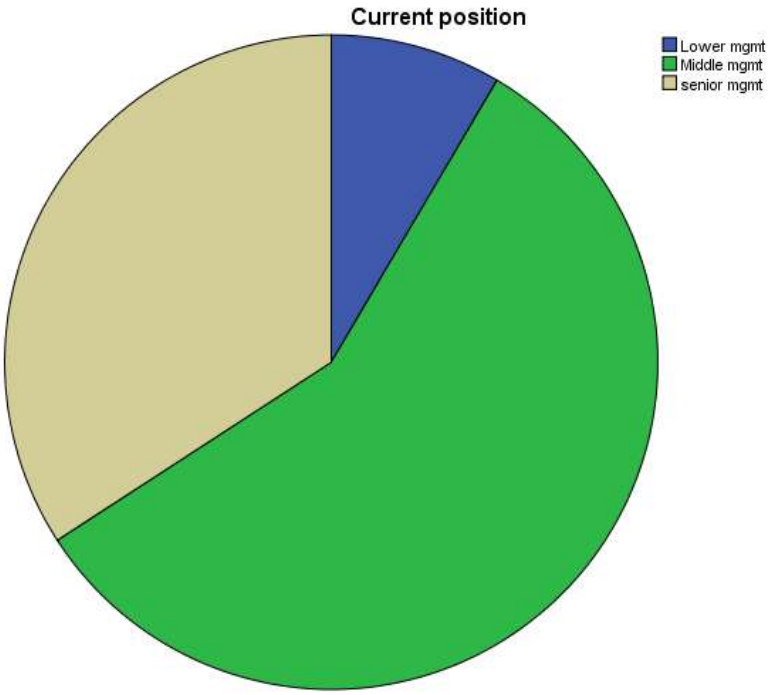

Figure 6 Pie chart of distribution of respondents by the current position

Table 9 Frequency of distribution of respondents by the current position

Distribution of respondents by the current position		
Age group	**Frequency**	**Per cent**
Lower mgmt.	31	8.5%
Middle mgmt.	210	57.4%
Senior mgmt.	125	34.2%
Total	366	100.0%

The relatively high proportion of respondents from middle management position could signify two things- firstly, most of the respondents who participated have been working for more than five years in their organisations, and this could indicate their managerial

positions as most individuals move to middle management positions after certain years of service. Secondly, it could be because most of the respondents, even those who are actually in lower management positions, identifying their positions as middle management. Middle and lower management individuals were the target population of the survey, as these are often the employees who use ERP for their day to day activities. Thus, even though lower management positions seem to be underrepresented in the sample, the high proportion of middle management respondents seems to help overcome this sample bias. These middle management individuals may have moved from lower management to middle management positions in the last few years, allowing them to comment in respect to both lower and middle management respondents.

4.1.4 Gender

Figure 7 and table 10 shows that male respondents represented 77.6% of the sample, while females represented 22.4% of the sample. Also, this seems unbalanced, but considering the lower proportion of female in the Saudi workforce, these numbers seem a good representation of the target population. The figure is somewhat in line with World Bank estimates which indicate the women labour force participation in the Saudi workforce was around 16.8% in 2019 (World Bank, 2019).

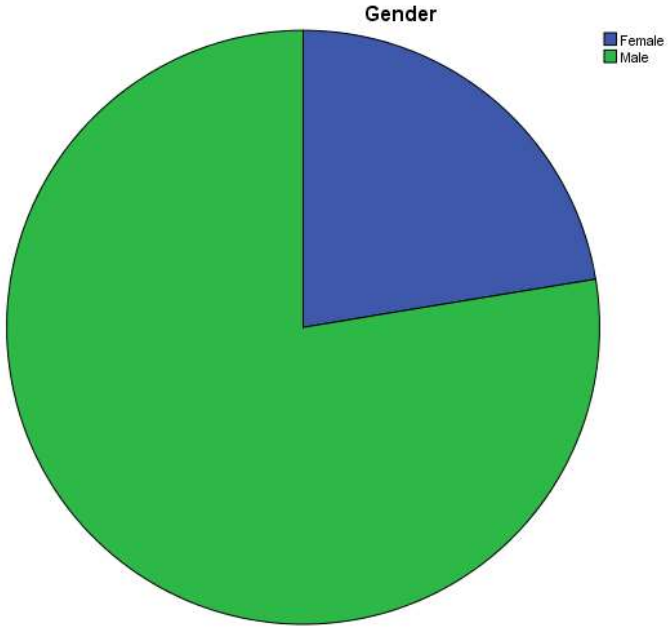

Figure 7 Pie chart of distribution of respondents by gender

Table 10 Frequency of distribution of respondents by gender

Distribution of respondents by Gender		
Age group	**Frequency**	**Per cent**
Female	82	22.4%
Male	284	77.6%
Total	366	100.0%

The sample is thus an accurate representation of the actual gender composition of the Saudi workforce. In one respect, it can even be argued that the sample is over-representing women because most of the women in Saudi Arabia are employed in education and medical profession with a very small proportion of women employees in other sectors. Irrespective of these arguments, the sample seems a good representation of men and women considering the under participation of women in the Saudi workforce.

In summary, the sample was dominated by male individuals in the 31-45 age group, having 5-10 years of experience and currently working in the Middle Management positions. However, there was significant enough representation of the people from other groups. Thus, according to the distribution of the respondents, the sample seems to be a good representation of the population which comprised of employees of ERP.

4.2 Descriptive statistics

Descriptive statistics explored included Mean and standard deviation.

4.2.1 Descriptive statistics of responses for risk variables

The table 11 below shows the descriptive statistics of responses for risk variables;

Table 11 Descriptive statistics of responses for risk variables

Descriptive Statistics		
	Mean	Std. Deviation
Performance Risk	2.7637	0.64091
Social Risk	3.0075	0.59832
Functional Risk	3.157559	0.524942
Time Loss Risk	2.763206	0.412624
Financial Risk	2.289617	0.522756
Security and Privacy Risk	3.074551	0.557428
Psychological Risk	2.673042	0.560731

Mean

The mean value of responses was higher than average for Social risk, Functional risk and Security and Privacy risk indicates that individuals are more concerned about these risks in adopting ERP. Time Loss Risk seems to be not much of a worry for most respondents. This is expected because one of the key benefits of ERP is reduced transaction and information exchange time. Respondents also registered lower than average responses for performance risk indicating that they are not overly worried about the ERP system performance. Respondents indicated that they trust the reliability of the system itself. Trusting the system seems to be a good indicator that respondents were unlikely to shift the blame for poor performance on the ERP system itself. Out of all the risks, financial risk received the lowest rating indicating that the respondents do not perceive any financial risks by using ERP. It is understandable because, in most of the cases, the ERP system is designed to flag the errors. Even if the employees make errors, it rarely leads to financial repercussions for them. Finally, the employees also registered lower than the average response for Psychological risks indicating the employees do not perceive any stress or anxiety resulting from the use of ERP. It is much easier to handle extrinsic risks through training, but intrinsic risks such as psychological risks are extremely difficult to manage as it may require emotional support for the users and maybe actually out of the domain of the organisational activities.

Standard Deviation

Furthermore, the standard deviation was between 0.4 and 0.64 for all the variables. This indicates that there was not a great deal of divergence in the responses of the individuals with most responses staying close to the mean value.

4.2.2 Descriptive statistics of responses for culture, training and ERP usefulness, ease of use and extent of usage variables

Next, the descriptive statistics of cultural dimensions and other variables in the conceptual framework were considered:

Table 12 Descriptive statistics of responses for culture, training and ERP usefulness, ease of use and extent of usage variables

Descriptive Statistics		
	Mean	Std. Deviation
Cultural index- Uncertainty Avoidance	3.4901	0.531407
Cultural index- Power Distance	3.306	0.5872
Cultural index- Collectivism	3.501821	0.553799
Cultural index- Masculinity	3.439891	0.63284
Cultural index- Long Term orientation	3.429872	0.695561
Training	3.509	0.448
Perceived Usefulness of ERP	3.04566	0.548951
Perceived Ease of Use of ERP	3.293989	0.503921
End User's Extent of Usage of ERP	3.493364	0.652042

Mean

Table 12 indicates that for uncertainty avoidance, the response was above average, indicating the respondents are concerned about the uncertainty involved in adopting to ERP. One of the key issues with the adoption of new technologies is often the uncertainties involved (Miller, 2019). Due to this uncertainty, the perceived risks could rise, leading to poor adoption of new technologies. In this respect handing the uncertainty involved with ERP could be one of the key objectives for organisations looking to adopt ERP (Miller, 2019).

Another key cultural dimension to consider in this respect is the power distance index. Respondents registered above-average responses for power distance index. This indicates that respondents felt a loss of control with ERP as compared with legacy systems. Indeed, in ERP, everything is traceable, and people's control could be diminished by the involvement of technology (Abdulah, 2016). Due to the very nature of the system, it is not possible to give users the control back without compromising with the quality of the system. In this respect, the better approach is to motivate individuals to buy into the

system by generating awareness of the mutual benefits of the system (Santos et al. 2018). The lack of control could then be balanced by other perceived benefits of adopting the ERP system. Power distance also refers to the distribution of power in the organisation and its decision-making structure. High power distance means people are coerced into using and adopting new technology (Hofstede, 2017). Technology is more about the democratisation of power, i.e. giving people more control over how they perform their day to day tasks. In this respect, the use of ERP should be to give more control to people rather than to take away their decision-making powers. Even in cases when this is not possible, the aim should be to educate users about the benefits of the system.

The third cultural dimension of collectivism also received higher than average responses. The higher responses received for this is in line with the higher than average responses received for social risk. This indicates that individuals are worried about alienation and about losing contact with their team. This also indicates that the respondents fear that with moving most of the work on ERP system, there will be little human interaction. In high collectivist cultures, people tend to value relationships and teamwork and act as a group. In such cultures, isolating individuals can leave a detrimental effect on their psyche and performance. It is, therefore, essential to ensure that ERP implementation does not affect their ability to socialise and does not affect the team compositions significantly. One of the alternatives, for example, is to give people alternative opportunities and spaces to socialise.

The fourth culture dimension of masculinity also received higher than average responses meaning respondents do believe that adopting ERP will increase competitiveness among team members. Saudi Arabia is a masculine culture where success is more important for people as it affects their social status. However, adopting new technology can prove challenging for people because they may be unsure of their capabilities in staying competitive in the new technological environment. Also, employees may feel threatened to lose their current social status in the new technological environment. Indeed, younger people are assumed to be more competent in utilising new technologies and in terms of using new technologies, they may outperform their older counterparts. This may erode the competitive advantage some individuals hold due to their work experience and may, therefore, affect their competitive positioning. This may be one of the aspects that may affect their adoption of ERP.

Finally, the long-term orientation cultural dimension also received higher than neutral responses. This indicates that respondents were concerned that ERP might be replaced by other technology in future, and hence it may not be worthwhile their efforts to learn and adapt ERP. This concern is not unfounded in this era of rapid technological changes as organisations look to implement the latest technologies in order to achieve competitive advantage. In order to alleviate such issues, it is useful for organisations to focus on the training of individuals not only on specific technologies but on improving the technological proficiency of individuals (Phaphoom et al. 2018). In this respect, continuous and proactive training of individuals may be a useful option rather than an ad hoc approach to training for specific technologies.

The positive responses recorded for training indicate that respondents were satisfied with the training provided by their organisations for ERP usage. Providing adequate training is useful not only in improving people's ability to adopt ERP but also boosts their motivation which may lead to improved adoption of ERP. Respondents confirmed that following the training, they feel confident in using ERP and that they can independently use the ERP system as a result of the training.

The improved training seems to have boosted perceived ease of use of ERP as is evident in the positive responses recorded by respondents for PEU. Training is useful in improving people's ability to use new technologies, and in the case of the organisations included in the survey, this seems to have clearly worked as planned. However, despite recording significantly positive responses for perceived ease of use, the responses for perceived usefulness of ERP were only moderately positive. This indicates that the respondents may not be completely convinced regarding the usefulness of ERP. Despite this, the respondents indicated that they had adopted ERP well in the sense that they use it for most of their activities and intend to completely switch to ERP with time.

Standard Deviation

The standard deviation for the all the variables was between 0.44 and 0.69 which is significantly less than 1 (size of an interval) indicating that there was no significant divergence in the responses of the individuals for the different variables.

4.3 Exploratory Factor Analysis

The goal of exploratory factor analysis (EFA) was to examine whether the different kinds of perceived risks and cultural dimensions loaded on a single factor or multiple dimensions. The twelve scales of perceived risks and cultural dimensions were measured by 48 items in the designed questionnaire.

Principal component analysis tests for underling variables that may be driving trends in the data which could cause grouping of variables. If such grouping occurs, it is useful to group the themes together because failure to do so may lead to erroneous results in the regression modelling due to correlation amongst independent variables. First principal component analysis indicated that all variables were equally important. As suggested by Alghofaly (2019), "a rotated solution was then sought, using varimax rotation with Kaiser normalisation to try to separate out sub-themes within the scale."

KMO values range between 0 and 1 with the lower values (close to zero) indicating that the sum of partial correlations is large compared to the sum of correlations. This indicates diffusion in the pattern of correlations making factor analysis inappropriate. On the other hand, values close to 1 indicate compact patterns of correlation making factor analysis suitable for yielding distinct and reliable factors. Kaiser (1974) recommended accepting values more than 0.5 and stated that values more than 0.7can be considered good. Table 13 below shows the SPSS output of the KMO test:

Table 13 SPSS output of KMO and Bartlett's test

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.507
Bartlett's Test of Sphericity	Approx. Chi-Square	969.776
	Df	66
	Sig.	.000

It shows that the value of the Kaiser-Meyer-Olkin Measure of Sampling Adequacy is 0.507, which, according to Kaiser (1974) and Hutcheson and Sofroniou (1999), can be considered adequate. Bartlett's measure tests the null hypothesis that the original correlation matrix is an identity matrix. A significant test tells us that the R-matrix is not an identity matrix; therefore, there are some relationships between the variables we hope to include in the analysis. The Bartlett's test of sphericity was statistically highly significant (p-value<.001), indicating the correlation matrix is not identity, and hence

there are correlations between the items (variables). The values of eigenvalues represent the variance, which needs to be higher than 1, associated with each extracted factor. The table below indicated that the data set contained five extracted factors (eigenvalues>1.00), with a total of variation equal to 68.67%. It is recommended by (Pallant, 2007) that weak items with low loading (values less than 0.3) are better excluded from the analysis to improve or refine the scales. However, in the table, it can be seen that there were no explanatory variables with loading values less than 0.3. The only variable with loading values lower than 0.3 was the culture-collectivism variable which could not be excluded.

Table 14 SPSS output for Bartlett's test of sphericity

Total Variance Explained

	Initial Eigenvalues			Extraction Sums of Squared Loadings		
Component	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	2.257	18.808	18.808	2.257	18.808	18.808
2	1.803	15.025	33.833	1.803	15.025	33.833
3	1.545	12.879	46.712	1.545	12.879	46.712
4	1.472	12.270	58.982	1.472	12.270	58.982
5	1.163	9.689	68.670	1.163	9.689	68.670
6	.876	7.300	75.971			
7	.745	6.212	82.183			
8	.642	5.352	87.535			
9	.561	4.675	92.210			
10	.394	3.280	95.490			
11	.343	2.862	98.353			
12	.198	1.647	100.000			

Extraction Method: Principal Component Analysis.

Communalities

	Initial	Extraction
Performance Risk	1.000	.731
Social Risk	1.000	.677
Functional Risk	1.000	.792
Time Loss Risk	1.000	.766
Financial Risk	1.000	.584
Security and Privacy Risk	1.000	.632
Psychological Risk	1.000	.649
Cultural index- Uncertainty Avoidance	1.000	.648
Cultural index- Power Distance	1.000	.658
Cultural index- Collectivism	1.000	.779
Cultural index- Masculinity	1.000	.759
Cultural index- Long Term orientation	1.000	.565

Extraction Method: Principal Component Analysis.

Table 14 shows the SPSS Output of the table of commonalities before and after extraction. The key assumption of the Principal component analysis is that all variances are common which means that prior to the extraction of the communalities will be equal to 1. The value of communalities in the 'extraction' column indicates the commonalities of variance in the data structure. Thus, for the column above, for Performance risk, 73.1 percent of the variance is common or shared with other variances in the data structure. The remaining 26.9 percent of the variance is unique to the variable itself.

Principal component analysis test results are shown in Table 15 below

Table 15 Component matrix- SPSS output for Bartlett's test of sphericity

Component Matrix[a]

	Component				
	1	2	3	4	5
Performance Risk	-.104	.485	-.077	-.580	.377
Social Risk	.104	.702	.361	.170	-.114
Functional Risk	.022	.170	-.718	.399	.297
Time Loss Risk	.113	-.284	.596	-.272	.494
Financial Risk	.078	-.247	.247	.412	.536
Security and Privacy Risk	.466	.530	.357	.081	.025
Psychological Risk	-.012	-.565	.350	.450	-.067
Cultural index- Uncertainty Avoidance	.741	-.041	.139	-.278	-.018
Cultural index- Power Distance	.752	.061	.006	.180	-.238
Cultural index- Collectivism	.247	-.525	-.163	-.582	-.278
Cultural index- Masculinity	.586	-.144	-.395	-.076	.483
Cultural index- Long Term orientation	.693	-.044	-.165	.201	-.127

Extraction Method: Principal Component Analysis.

a. 5 components extracted.

For example, component 1 seems to relate to the centralised culture of Saudi Arabia, while component 2 relates to the social aspects of Saudi society and culture. Looking closely at the numbers the components are not significantly overlapping in two variables indicating that while there is some commonality among the variables which can be explained using some components but the commonality is not strong enough for the variables to be eliminated altogether.

4.4 Reliability Analysis

Once factor extraction is done using Exploratory Factor Analysis, the scale reliability should be examined for reliability by testing how closely related are the items under each construct related to each other (Bryman and Cramer, 2012). This is particularly critical for this research because the constructs have been obtained from different sources and grouped together. These constructs have been designed for different contexts and must be tested whether they can be grouped together like this for the context of this research (Field, 2009).

The Cronbach's alpha statistic in the reliability analysis test indicates the reliability of an item Cronbach's alpha, coefficient of reliability, is a measure for an internal consistency so that reliability for each dimension is obtained. Cronbach's alpha is a measure of internal consistency. In other words, it tests whether a group of items are closely related or not, which, in turn, informs whether a scale is reliable. George and Mallery (2012) recommended to use thresholds for Cronbach's alpha: $\alpha > 0.9$ – excellent; $\alpha > 0.8$ – good; $\alpha > 0.7$ – acceptable; $\alpha > 0.6$ – questionable; $\alpha > 0.5$ – poor; and $\alpha < 0.5$ – unacceptable. From Table 16 below, Cronbach's alpha ranged from acceptable (>0.64) to good (>0.80), which indicated that the reliability of dimensions was satisfying.

Table 16 Cronbach's alpha. SPSS output for reliability analysis of the questionnaire instrument

Variable	Number of items	Cronbach's alpha
Performance risk	4	0.811
Social risk	4	0.778
Functional risk	3	0.671
Time loss risk	3	0.645
Financial risk	3	0.683
Security and privacy risk	7	0.809
Psychological risk	3	0.743
CI- Uncertainty avoidance	8	0.771
CI- Power distance	4	0.733
CI- Collectivism	3	0.715
CI- Masculinity	3	0.654
CI- Long term orientation	3	0.716
Training	10	0.704
Perceived Ease of Use of ERP	7	0.832
Perceived Usefulness of ERP	5	0.771
Employees' extent of usage of ERP	3	0.663

It is also argued that too high Cronbach alpha values (>0.95) are also questionable because it indicates a too high correlation between some items requiring the author to evaluate it further to see if some of the items are too similar and must be integrated. However, in this case, none of the variables had too high Cronbach's alpha values indicating no such concerns that need addressing in our data.

4.5 Normality Assessment

One of the key assumptions of most of the statistical test is that the data is normally distributed.

Negative skewness refers to the length of the left tail, while positive skewness refers to the length of the right tail in the distributed data. In other words, if the data is negatively skewed, it means that most of the observation are concentrated on the left-hand side. Before regression analysis can be conducted it is essential to test the data for certain assumptions such normality, linearity, and independence of error terms (Tatham et al., 2006; Sekaran and Bougie, 2006; Sekaran, 2006). In case the data is not symmetric more data should be collected. Bulmer (1979) provides a classic rule of thumb to interpret skewness value. He states that:

- If skewness is less than −1 or greater than +1, the distribution is highly skewed.
- If skewness is between −1 and −½ or between +½ and +1, the distribution is moderately skewed.
- If skewness is between −½ and +½, the distribution is approximately symmetric.

For all the variables, the skewness statistic is between −½ and +½, with the only exceptions being Psychological risk, collectivism, perceived usefulness and Employees' expected usage of ERP. For psychological risk and Employees' expected usage of ERP, the divergence is not significantly high with a skewness value of 0.532 and -.541. Thus, even in those cases the skewness value exceeds this range only marginally suggesting it is relatively safe to assume these variables to be also normally distributed (Bulmer, 1979). For collectivism and perceived usefulness that distribution is moderately skewed as the skewness values lie between -1 and +1. Thus, in this sample, the data was found to be symmetric based on the value of skewness statistic meaning the data is sufficiently normalised for regression analysis. It is often advised to take sample size into consideration when deciding for normality using the skewness statistic (Sekaran, 2006).

A sample size of over 300 is high enough to accept skewness as a measure of normality of data distribution.

Descriptive statistics like skewness and kurtosis are often used to test whether the variables are normally distributed or not (Pallant, 2007). For example, 2 < skewness< -2 indicates that the data is normally distributed (Hair et al. 2003).

Table 17 Normality assessment (Kurtosis and skewness statistics) for dependent and independent variables

Normality assessment		
	Skewness	Kurtosis
Performance Risk	-0.451	-0.044
Social Risk	-0.186	-1.3
Functional Risk	-0.121	-0.756
Time Loss Risk	0.152	0.871
Financial Risk	-0.261	-0.342
Security and Privacy Risk	-0.201	-0.729
Psychological Risk	0.532	-0.136
Cultural index- Uncertainty Avoidance	0.183	-0.791
Cultural index- Power Distance	-0.346	1.163
Cultural index- Collectivism	-0.709	0.436
Cultural index- Masculinity	-0.359	-0.328
Cultural index- Long Term orientation	-0.173	0.166
Training	0.03	-0.464
Perceived Usefulness of ERP	-0.76	1.118
Perceived Ease of Use of ERP	-0.483	-0.296
End User's Extent of Usage of ERP	-0.541	-0.174

As table 17 indicates, the skewness and kurtosis values for all the variables lie in the range of +2 and -2. Hence, we can safely assume that all variables satisfy the condition of normal distribution.

4.6 Common Methods Bias Test

Common methods bias test is useful in estimating whether the observed trends in the data are due to some underlying variable. For example, respondents' bias could lead to certain trends in the data rather than their actual responses to the questions. Generally, such bias can be detected using Exploratory Factor Analysis test. In this research Exploratory Factor Analysis test was conducted with two settings, the number of factors to extract

was limited to 1 and secondly rotation was set to 'None'. The output for the test is given in table 18 below:

Table 18 Common methods bias- SPSS output for principal component analysis

Communalities

	Initial	Extraction
PR1	1	0.123
PR2	1	0.051
PR3	1	0.056
PR4	1	0.030
SR1	1	0.385
SR2	1	0.356
SR3	1	0.459
SR4	1	0.001
FR1	1	0.009
FR2	1	0.000
FR3	1	0.014
TLR1	1	0.001
TLR2	1	0.000
TLR3	1	0.345
FiR1	1	0.225
FiR2	1	0.226
FiR3	1	0.334
SPR1	1	0.310
SPR2	1	0.197
SPR3	1	0.230
SPR4	1	0.273
SPR5	1	0.331
SPR6	1	0.260
SPR7	1	0.189
PsyR1	1	0.202
PsyR2	1	0.120
PsyR3	1	0.061
CI-UA1	1	0.128
CI-UA2	1	0.057
CI-UA3	1	0.179
CI-UA4	1	0.219
CI-UA5	1	0.290
CI-UA6	1	0.223
CI-UA7	1	0.241
CI-UA8	1	0.180
CI-PD1	1	0.216
CI-PD2	1	0.039

CI-PD3	1	0.048
CI-PD4	1	0.066
CI-Co1	1	0.005
CI-Co2	1	0.033
CI-Co3	1	0.030
CI-M1	1	0.258
CI-M2	1	0.314
CI-M3	1	0.247
CI-LT1	1	0.221
CI-LT2	1	0.192
CI-LT3	1	0.114
TS1	1	0.115
TS2	1	0.122
TS3	1	0.054
TS4	1	0.170
TS5	1	0.208
TS6	1	0.279
TS7	1	0.212
TS8	1	0.229
TS9	1	0.171
TS10	1	0.229
PEU1	1	0.037
PEU2	1	0.046
PEU3	1	0.063
PEU4	1	0.036
PEU5	1	0.005
PEU6	1	0.031
PEU7	1	0.029
PU1	1	0.246
PU2	1	0.299
PU3	1	0.235
PU4	1	0.171
PU5	1	0.210
EUEU1	1	0.108
EUEU2	1	0.055
EUEU3	1	0.109

Extraction Method: Principal Component Analysis.

The value ranges between 0 and 0.459, indicating that no single factor explains more than 45.9% of the variance in the responses. Since this value is below the acceptable value of 50%, it can be suggested that the sample does not suffer for Common Methods Bias.

4.7 Regression Analysis

The regression models tested the following three hypotheses:

Hypothesis H_1: Employees' perception of Performance_risk, Social_Risk, Functional_Risk, Time_Loss_Risk, Financial_Risk, Security_and_Privacy_Risk, Psychological_Risk involved in the adoption of ERP and five Saudi cultural dimensions Uncertainty avoidance, power distance, Collectivism, Masculinity and, Long term orientation) as well as the training provided by the organisation affect end user's Perception of the usefulness of the ERP system.

Hypothesis H_2: Employees' perception of Performance_risk, Social_Risk, Functional_Risk, Time_Loss_Risk, Financial_Risk, Security_and_Privacy_Risk, Psychological_Risk involved in the adoption of ERP and five Saudi cultural dimensions Uncertainty avoidance, power distance, Collectivism, Masculinity and, Long term orientation) as well as the training provided by the organisation affects end user's Perception of the Ease of Use of the ERP system.

Hypothesis H_3: Perceived usefulness of ERP system and Perceived Ease of Use of ERP system affect End User's Extent of Usage of the ERP system.

4.7.1 First regression model

First regression model tested is given in the equation below:

$$\text{Perceived\_Usefulness} = \beta_0 + \beta_1 * \text{Performance\_risk} + \beta_2 * \text{Social\_Risk} + \beta_3 * \text{Functional\_Risk} + \beta_4 * \text{Time\_Loss\_Risk} + \beta_5 * \text{Financial\_Risk} + \beta_6 * \text{Security\_and\_Privacy\_Risk} + \beta_7 * \text{Psychological\_Risk} + \beta_8 * \text{Organisational\_Culture} + \beta_9 * \text{Training\_and\_Support}$$

Where $\beta_0, \beta_1, \beta_2, \beta_3, \beta_4 \ldots\ldots \alpha_9$ are coefficients of regression. Figure 8 below shows the graphical representation of the first regression model

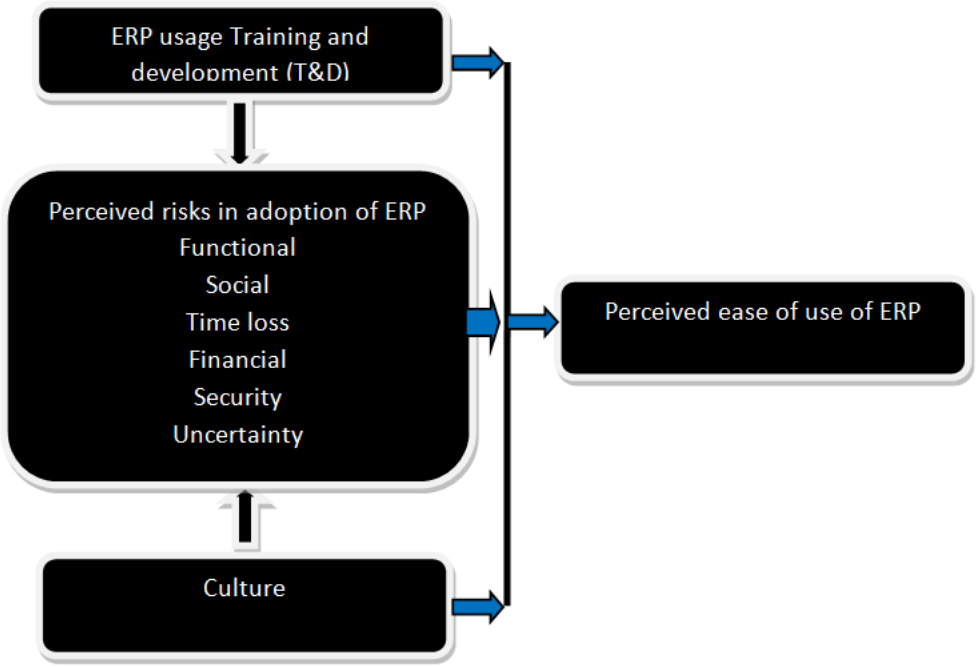

Figure 8 Representation of the hypothesis for the first regression model

Every linear regression model should be checked for the assumptions of normality, linearity, homoscedasticity, and absence of multi collinearity.

For making valid inferences from the regression model, it is essential that the residuals of regression, i.e. the error terms, are normally distributed. This can be done using the normal Predicted Probability (P-P) plot.

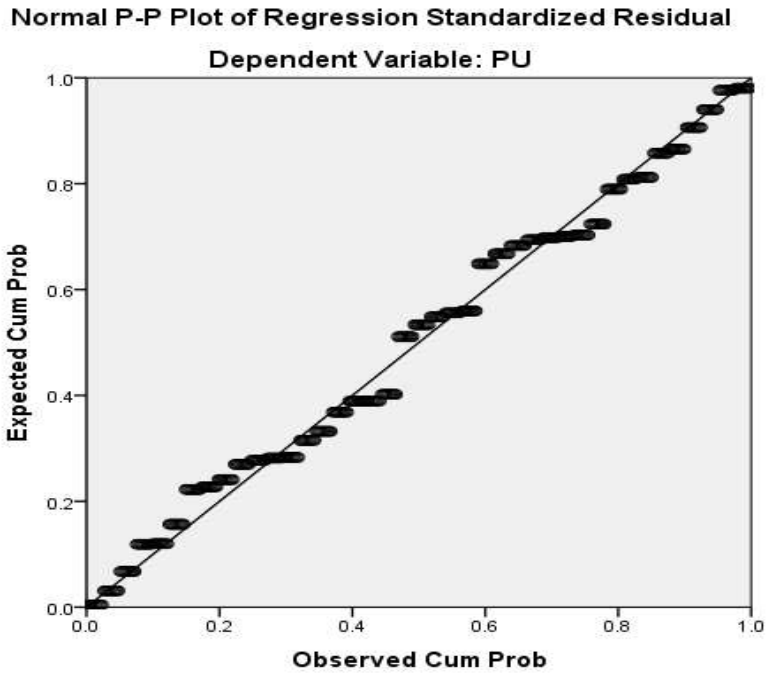

Figure 9 Normal Predicted Probability (P-P) plot for the first regression model

From the Normal P-P plot in figure 9, it can be seen that the residuals conform to the diagonal normality line indicated in the plot confirming that the residuals are normally distributed.

The model is tested for homoscedasticity. Homoscedasticity refers to whether these residuals are equally distributed, or whether they tend to bunch together at some values, and at other values, spread far apart. Figure 10 below shows the scatterplot of residuals.

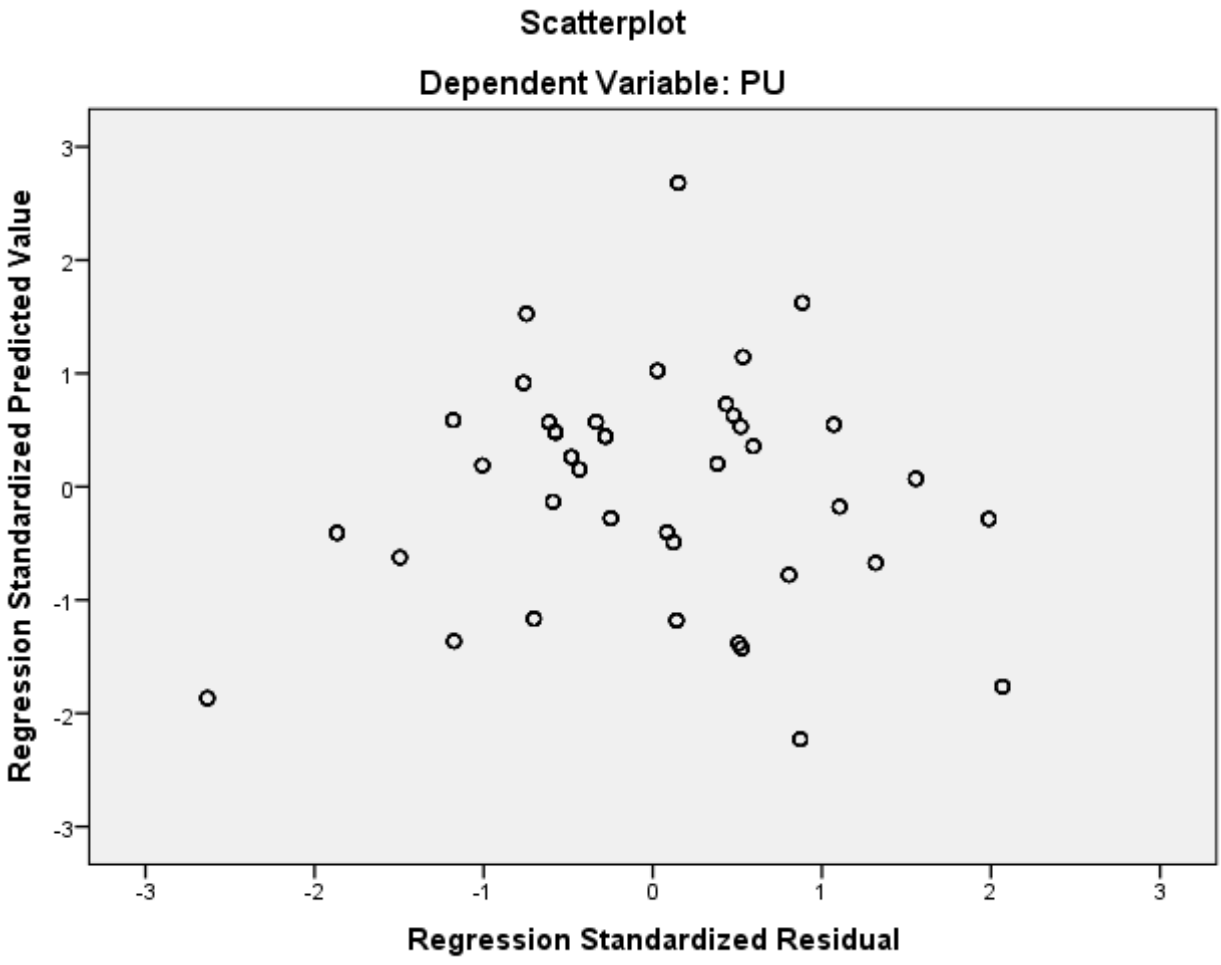

Figure 10 Residual scatterplot for the first regression model

This chart does not show violations of independence, homoscedasticity and linearity assumptions.

The table 19 below gives the output of the regression test.

Table 19 SPSS output of the summary of the first regression model

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.402[a]	.162	.131	.511784462000000

a. Predictors: (Constant), TS, TLR, CI_Co, PR, SPR, CI_M, FiR, CI_LT, PsyR, CI_UA, FR, CI_PD, SR

b. Dependent Variable: PU

ANOVAa

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	17.795	13	1.369	5.226	.000[b]
	Residual	92.197	352	.262		
	Total	109.992	365			

a. Dependent Variable: PU

b. Predictors: (Constant), TS, TLR, CI_Co, PR, SPR, CI_M, FiR, CI_LT, PsyR, CI_UA, FR, CI_PD, SR

The small difference between the values of R^2 and Adj-R^2 indicates that the sample included sufficient number of cases. Adj-R^2 = 0.131 indicates that the thirteen explanatory variables included in the model can explain up to 13.1% per cent variation in the Perceived_Usefulness of the ERP system. This is quite low but understandable because Perceived_Usefulness of the ERP system is likely to be affected by several other factors apart from perceived risks and training.

F-test component of the linear regression indicates whether there exists a linear relationship between the independent and depend variables. In other words, it tests whether the value of R^2 can be zero. With F = 5.226 and 365 degrees of freedom, the test is statistically significant which confirms that there is a linear relationship between the predictors and dependent variables.

Table 20 SPSS output for the first regression model

Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
	B	Std. Error	Beta			Tolerance	VIF
(Constant)	1.282	.595		2.155	.032		
Performance Risk	-.043	.050	-.050	-.865	.388	.712	1.405
Social Risk	.047	.064	.051	.730	.466	.484	2.067
Functional Risk	.071	.068	.068	1.041	.299	.565	1.770
Time Loss Risk	.132	.084	.100	1.575	.116	.596	1.678
Financial Risk	.062	.057	.059	1.083	.280	.799	1.252
Security and Privacy Risk	-.135	.065	-.137	-2.065	.040	.543	1.842
Psychological Risk	.078	.060	.080	1.299	.195	.630	1.587
Cultural index- Uncertainty Avoidance	-.261	.064	-.253	-4.090	.000	.624	1.603
Cultural index- Power Distance	-.082	.060	-.087	-1.350	.178	.571	1.751
Cultural index- Collectivism	-.111	.062	-.112	-1.778	.076	.600	1.665
Cultural index- Masculinity	-.085	.060	-.098	-1.428	.154	.506	1.977
Cultural index- Long Term orientation	.172	.047	.218	3.693	.000	.686	1.459
Training	.189	.072	.155	2.622	.009	.685	1.459

a. Dependent Variable: PU

Multi collinearity refers to when the predictor variables are highly correlated with each other. This can lead to erroneous results as the impact of the same underlying variable can be tested twice in the same model. To test for multi collinearity, SPSS provides the variance inflation factor (VIF). As a general rule, VIF values below five are considered the best case for no multi collinearity. In the last column in the table above it can be seen that all VIF values are less than 2.07, which indicates no multi collinearity among predictor variables.

Four factors were found to have a statistically significant impact on Perceived Usefulness of ERP system. These are Security and Privacy risks, Uncertainty Avoidance cultural dimension, Long Term orientation cultural dimension and Training. Remaining variables were found to have no statistically significant impact on Perceived Usefulness of ERP system. The results are discussed below;

Performance risk was not found to have any statistically significant impact on Perceived Usefulness of ERP. Broadly speaking perceived performance risk is expected to negatively affect the perceived usefulness of the ERP. However, it is possible that respondents assumed performance and usefulness in two different aspects. The respondents may have assumed usefulness with adequate performance as given.

The social risk was not found to have any statistically significant impact on Perceived Usefulness of ERP. It is understandable because the usefulness of the system is not linked with the socialising aspects of individual's lives. People use the system to accomplish the organisational tasks and activities, so the only aspect they would consider the system usefulness will be in terms of organisational outputs.

Surprisingly the functional risk was not found to have any statistically significant impact on Perceived Usefulness of ERP. It may be because the users do not assume the link between the usefulness of the system and the system performance because, just like in case of performance risk, the usefulness of the system is considered given that the system functions as expected.

Time loss risk was not found to have any statistically significant impact on Perceived Usefulness of ERP. It is understandable because ERP is expected to cut down the processing and information exchange time. So, the system is contrary to the perception of time loss; it is, in fact, expected to reduce the time loss risk.

The financial risk was not found to have any statistically significant impact on Perceived Usefulness of ERP. ERP systems are quite sophisticated in terms of identifying and flagging errors. This, if anything, is likely to reduce any risks of misreporting. Also, irrespective of the errors in the system committed by any user; there are rarely financial repercussions for the users unless such acts are done fraudulently. In this respect, it can be understood why the respondents indicated that financial risks have no links with the usefulness of the ERP system.

Psychological risks were not found to have any statistically significant impact on Perceived Usefulness of ERP. It is a possibility that the respondents considered psychological stress as an outcome of using a less useful system rather than vice versa. Thus, the psychological stress may not be a cause of usefulness of the system, but users

may feel psychological stress as a result of using a less useful system. This may explain the unexpected results in this case.

Security and privacy risk may negatively affect the Perceived Usefulness of ERP. It is understandable because individuals who are concerned about security and privacy risks may fail to see the benefits of adopting ERP. Indeed, this is one of the perceived risks affecting mostly the new users of technology who do not understand the several risks involved. One of the key risks in adoption of new technologies is the security and privacy risks as sometimes even avid users do not know how to fully protect themselves against such risks. The constant discussion of such issues in public media also boosts this perceived risk in users' minds.

Uncertainty Avoidance might negatively affect the Perceived Usefulness of ERP. Uncertainty avoidance is similar to risk avoidance, and it is understandable that societies which tend to avoid risk will try to resist changes such as those brought by the introduction of ERP. Saudi Arabia ranks high in uncertainty avoidance, which means that Saudi users are likely to be risk-averse. It may affect their perception of the usefulness of new technologies. Training can be useful in this regard because users can be informed of the benefits of ERP, and one of those is that it reduces uncertainty into how the system behaves. One of the key benefits of ERP is the standardisation of processes which could effectually reduce system uncertainty. However, this is only possible one RP is fully embraced and adopted by the users.

Power distance cultural dimension was not found to have any statistically significant impact on Perceived Usefulness of ERP. Power distance refers to the extent to which the users are allowed to make their own decisions. Saudi Arabia is a high-power distance culture which means individuals tend to adhere to hierarchy and power positioning with individuals believing in strictly adhering to instructions. ERP system is quite useful in this regard because it eliminates the need for individual decision making to a great extent as the processes are standardised. However, the responses indicate that in respondents' opinion, the power distance dimension does not have an impact on the perceived usefulness of the ERP systems.

Collectivism cultural dimension was not found to have any statistically significant impact on Perceived Usefulness of ERP. Saudi Arabia is a highly collectivist society with people

paying special attention to the group and social values. In collectivist societies, the perception of the usefulness of ERP can be affected by the fact whether individuals believe that they are able to accomplish their tasks without the help of their team members or not. In other words, whether people view them as solely responsible for their tasks or view themselves as part of a large organisational network where the contribution from each member is essential in order to accomplish the team objectives. In this case, the responses were inconclusive. This could be because ERP is aimed at standardising the tasks and processes with each individual being responsible for only their task; the system is designed so each individual can on what they are supposed to do with the system flagging any errors made by any of the users. In this respect, the question about shrewdness of performance does not arise and hence users, despite having an overall collectivist culture, may not see their performance as interdependent on each other.

Masculinity cultural dimension was not found to have any statistically significant impact on Perceived Usefulness of ERP. With a masculinity index score of 60, Saudi Arabian citizens tend to overwork. Saudi managers tend to be assertive and Saudi individuals tend to focus on being competitive and successful with success being measured with the amount of material wealth owned by an individual. However, one of the key aspects of ERP is standardisation which eliminates the need to compete. The respondents may believe that the ERP system will eliminate the need to be assertive and competitive if anything. In this respect, the masculinity of Saudi culture is unlikely to affect people's perception of the usefulness of the ERP system.

Long Term oriented culture might positively affect the Perceived Usefulness of ERP. Saudi Arabia scores low (36) on the Hofstede culture index for Long Term Orientation dimension. Normative societies which score low on this dimension prefer to maintain time-honoured traditions and norms while viewing societal change with suspicion. Results indicate that the long-term orientation of culture is likely to positively affect the Perceived Usefulness of the system. In this respect, the short-term orientation of Saudi culture (as indicated by its low score on Hofstede's Long-Term Orientation cultural dimension) will prove to be an impediment in bringing changes. Societies which are long term oriented tend to look at the change in a positive and constructive manner such as essential for future growth. On the other hand, societies with short term-oriented cultures will look at change as destructive and may, thus, resist change.

Finally, training is likely to positively affect the Perceived Usefulness of ERP system as per respondents' views. This is expected because training may not only help individuals in learning about the system but may also educate them in several ways that the system is of mutual benefit to the users as well as the organisation. For example, one of the benefits of ERP systems is that it eliminates errors by reducing the possibility of entering and/or flagging incorrect information as well as ensuring continuous and real-time exchange of information. These benefits will only be realised if the individuals experience them in real life and training can be a useful strategy in gradually exposing the individuals to such benefits. Every user will identify the benefits in the context of their role, but for this, they must be trained to use the system and support must be provided for them to explore and learn more about the system. In this respect, training can potentially boost the perceived usefulness of ERP systems, as was confirmed by the respondents.

4.7.2 Second regression model

Second regression model tested is given in the equation below:

Ease_of_Use = = β_0 + β_1* Performance_risk + β_2* Social_Risk + β_3* Functional_Risk + β_4* Time_Loss_Risk + β_5* Financial_Risk + β_6* Security_and_Privacy_Risk + β_7* Psychological_Risk + β_8* Organisational_Culture + β_9* Training_and_Support

Where β_0, β_1, β_2, β_3, β_4 ..... α_9 are coefficients of regression. Figure 11 below shows the graphical representation of the second regression model

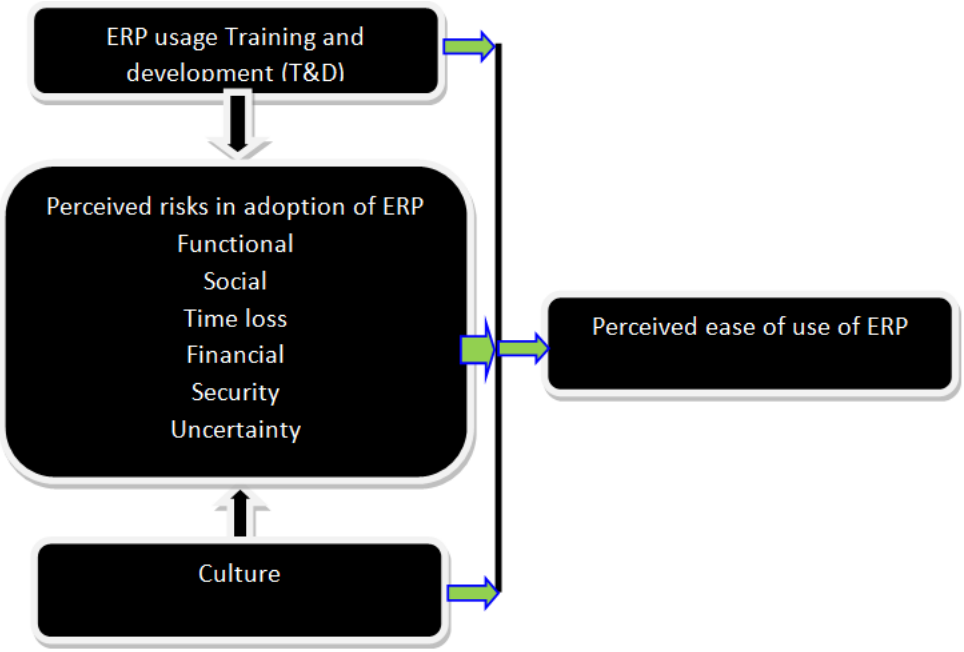

Figure 11 Representation of the hypothesis for the second regression model

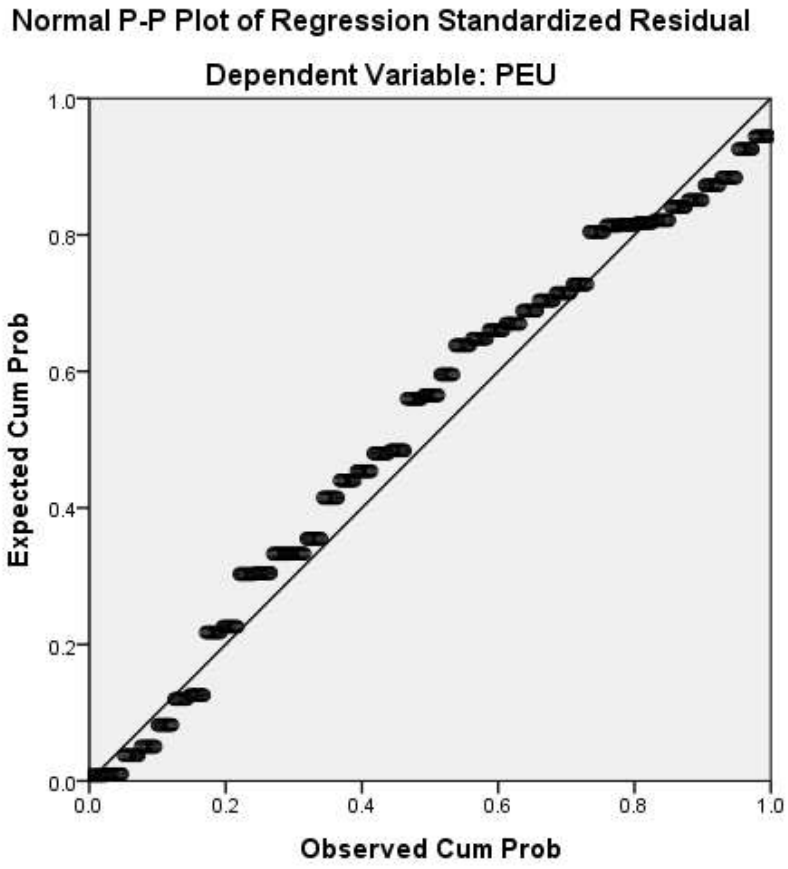

Figure 12 Normal Predicted Probability (P-P) plot for the second regression model

In the plot in figure 12 shows that the residuals conform to the diagonal normality line indicated in the plot confirming that the residuals are normally distributed.

The model was tested for homoscedasticity. Figure 13 below shows the scatter plot of the residuals.

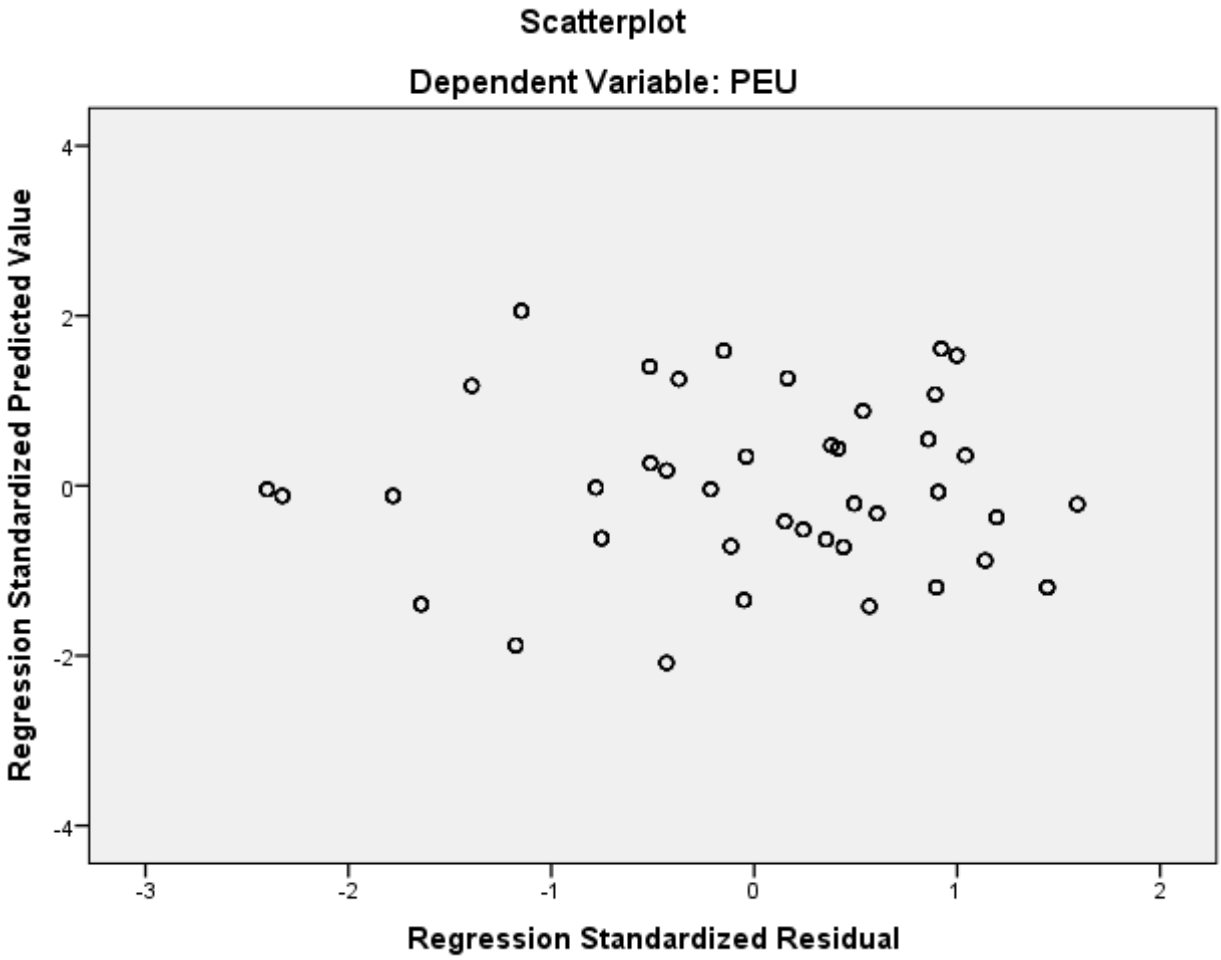

Figure 13 Residual scatterplot for the second regression model

This chart does not show violations of independence, homoscedasticity and linearity assumptions. The table 21 below gives the output of the regression test

Table 21 SPSS output of the summary of the second regression model

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.701[a]	.491	.472	.366075598000000

a. Predictors: (Constant), TS, TLR, CI_Co, PR, SPR, CI_M, FiR, CI_LT, PsyR, CI_UA, FR, CI_PD, SR

b. Dependent Variable: PEU

ANOVAa

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	45.515	13	3.501	26.126	.000[b]
	Residual	47.172	352	.134		
	Total	92.687	365			

a. Dependent Variable: PEU

b. Predictors: (Constant), TS, TLR, CI_Co, PR, SPR, CI_M, FiR, CI_LT, PsyR, CI_UA, FR, CI_PD, SR

The small difference between the values of R^2 and Adj-R^2 indicates that the sample included sufficient number of cases. Adj-R^2 = 0.472 indicates that the thirteen explanatory variables included in the model can explain up to 47.2% per cent variation in the Ease of Use of the ERP system. This indicates that the explanatory variables discussed here have a more significant impact on the variance in ease of use than they do on perceived usefulness of the system. With F = 26.126 and 365 degrees of freedom, the test is statistically significant which confirms that there is a linear relationship between the predictors and dependent variables.

Table 22 SPSS output for the second regression model

Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients			Collinearity Statistics	
	B	Std. Error	Beta	t	Sig.	Tolerance	VIF
(Constant)	4.631	.425		10.885	.000		
Performance Risk	-.216	.035	-.274	-6.088	.000	.712	1.405
Social Risk	.065	.046	.078	1.421	.156	.484	2.067
Functional Risk	-.145	.049	-.151	-2.990	.003	.565	1.770
Time Loss Risk	-.212	.060	-.173	-3.519	.000	.596	1.678

Financial Risk	-.001	.041	-.001	-.016	.988	.799	1.252
Security and Privacy Risk	-.171	.047	-.189	-3.663	.000	.543	1.842
Psychological Risk	.002	.043	.002	.035	.972	.630	1.587
Cultural index- Uncertainty Avoidance	-.254	.046	-.268	-5.573	.000	.624	1.603
Cultural index- Power Distance	.172	.043	.200	3.977	.000	.571	1.751
Cultural index- Collectivism	-.078	.045	-.085	-1.739	.083	.600	1.665
Cultural index- Masculinity	.180	.043	.226	4.223	.000	.506	1.977
Cultural index- Long Term orientation	.150	.033	.207	4.516	.000	.686	1.459
Training	.236	.052	.210	4.576	.000	.685	1.459

a. Dependent Variable: PEU

In the last column in table 22, it can be seen that all VIF values are less than 2.07, which indicates no multicollinearity among predictor variables. Nine factors were found to have a statistically significant impact on Perceived Ease of Use of ERP system. These are Perceived Performance risk, Perceived Functional risk, Perceived Time Loss risk, perceived Security and Privacy risks, Training and Cultural dimensions of Uncertainty Avoidance, Power Distance, Masculinity, and Long-Term Orientation. Remaining independent variables do not seem to have any statistically significant causal relationship with Ease of Use of ERP system. The results are discussed below.

Performance risk was found to negatively affect Perceived Ease of Use of ERP. Indeed, if people are apprehensive that the ERP system is not likely to produce desired outcomes or if they think that the ERP system will restrict them in their ability to perform their tasks as they are used to then it is likely to affect their perception of the ease of use of the system. One of the most significant challenges in case of ERP is that it is quite standardised meaning some of the legacy processes need to be altered to fit the ERP process model. For people who are too accustomed to doing things in a particular way may find it difficult to adapt to the ERP model, and it may affect their perception of ease of using the system. This can, however, be overcome through adequate training as people can gradually earn how to perform the same tasks and functions using ERP.

The social risk was not found to have any statistically significant impact on Perceived Ease of Use of ERP. ERP is completely focused on technical aspects of the job and

consequently may have no relationship with the social aspects of individuals' lives. In this respect, even though ERP may lead to a slightly higher degree of alienation, there is no evidence, at least in respondents' opinion to suggest that social aspects of the risks associated with these will affect their perception of the perceived ease of use of ERP. One of the respects, in which, social risks may actually affect perceived ease of use is the extent to which people believe they can obtain support from people in their social networks in case something goes wrong. For example, it is quite common for people to seek advice and support of their colleagues in case they are unsure of something and may need some help in troubleshooting. This may affect their perceived usefulness of a system. However, in the case of ERP, this does not seem to be an issue. This could be because technical support available through the system itself may be sufficient, or the respondents may believe that the people in their social network are not of much help in improving their ability to use the system.

The functional risk was found to have a statistically significant impact on Perceived Ease of Use of ERP. It is understandable, as issues such as system unavailability or reliability will affect people's opinion on how easily they can use the system. The problem with ERP is the technicality of the system, which means that individuals must seek expert advice as and when something goes wrong. It is also essential that the support team is capable of handling both technical and non-technical queries associated with the use of ERP. Because ERP is a standardised system, often quite different for the legacy systems, people must be provided with adequate support in using the system. This will reduce the functional risks and consequently improve the perceived ease of use of the ERP system.

Time loss risk was found to have a statistically significant impact on Perceived Ease of Use of ERP. While ERP is expected to reduce transaction and information processing time, the downtime experienced due to issues such as system unavailability or not being able to perform certain tasks may affect people's perception of the ease of using the system. In this respect, the time loss risk may be somewhat associated with performance and functional risks. If people are trained adequately on troubleshooting or even seeking support, then their perception of the ease of use of the system might improve.

The financial risk was not found to have any statistically significant impact on Perceived Ease of Use of ERP. Use of ERP systems may not be associated with any financial

repercussions, and this may be the reason why individuals did not see financial risks affecting their perception of ease of use of the system.

Psychological risks were not found to have any statistically significant impact on Perceived Ease of Use of ERP. Like in the case of perceived usefulness, people may see psychological stress as an outcome of not being able to use the system rather than vice versa. In this respect, the causal relationship between psychological stress risk and ease of use of the system may be inverse. However, the response indicates that the likelihood of such risks does not affect their perception of the ease of use of the system. It could be that the respondents may not be able to anticipate and visualise such risks even though such risks may frequently occur with users of new systems. Even in such cases when such risks may occur, adequate training may be quite useful. Training will help individuals in minimising the likelihood of such risks occurring and support may be useful in minimising the impact of such risks when they occur.

Security and privacy risk may negatively affect Perceived Ease of Use of ERP. Like in all technological systems, one of the most significant concerns of the users and their organisation are the associated security and privacy risks. In recent times there have been quite a few cases of industrial espionage and hackers stealing sensitive information using sophisticated tools. While h employees may be quite skilled in doing their job, they may not be so skilled when it comes to protecting themselves against such threats. The fear that using online systems may expose them to such risks may affect their perception of how easy it is to use the system. One of the most significant drawbacks of using technology is the exposure to security and privacy risks. In his respect, training can be useful in order to educate users about how to protect themselves against such threats. At the same time, support must be provided to users who are exposed to such risks despite their best efforts to protect themselves.

As expected, the results indicate that Uncertainty Avoidance cultural dimension might negatively affect Perceived Ease of Use of ERP. Indeed, using technological systems which may be inherently different for the legacy systems that the individuals are used to using may involve several risks. High uncertainty avoidance culture of Saudi Arabia suggests that Saudi users may perceive higher risks in using ERP systems, and it may negatively affect their perceived ease of use of the system. This is one thing where training can be useful in that it can help users reduce the associated uncertainty by using

the ERP system. Regression tests conducted to check the causal relationship between uncertainty avoidance and training indicate that the latter can affect the uncertainty avoidance impact. In essence, what training might actually do is reduce the uncertainty itself or may help people in learning better how to cope with uncertainty.

Power distance cultural dimension was found to have a positive and statistically significant impact on Perceived Ease of Use of ERP. It may be explained by the fact that Saudi Arabia is a high-power distance culture. Individuals look for clear instructions and play by the rules. The ERP system is a robust system which is standardised and suitable for individuals who look for clear instructions and guidance. It is much easier for individuals in high power distance cultures to work on standardised systems as they may not need to make a lot of decisions and may, therefore, not have to shoulder the responsibility of the consequences. In this respect, the high-power distance culture of Saudi Arabia improves Saudi users' perception of the ease of use of the system.

Collectivism cultural dimension was not found to have any statistically significant impact on Perceived Ease of Use of ERP. In collectivist cultures, individuals tend to act like a team/group where the perception and behaviour of one individual are influenced by the beliefs of the group, he/she associates with. ERP more or less isolates the individuals at last professionally so that each individual performs as specific task and is responsible for that task only. Also, the responsibility of individuals can easily be determined as most of the data produces concrete and indisputable. Even in cases when people find it difficult to use the system, they cannot seek support from their team members because the tasks allocated to different individuals may be different making it difficult for people to support and advise each other. Thus, the collectivist culture may not have any causal impact on people's perception of ease of use of ERP.

Masculinity cultural dimension was found to have a positive and statistically significant impact on Perceived Ease of Use of ERP. Saudi Arabia scores 60 on this dimension and is thus a Masculine society. This is somewhat surprising considering that the ERP system is standardised and may not involve conflict resolution and competitiveness. One of the respects in which masculinity may affect the ease of use is how competitive individuals feel in terms of using the system. Individuals who are younger may hold some advantage due to their exposure to new technologies. Older individuals may have to compete against them, especially in terms of learning how to use the system. This may lead to an

environment where people self develops their technical skills in order to retain their competitive advantage or risk being removed. This may explain the respondents' views.

Long Term oriented culture might positively affect Perceived Ease of Use of ERP. Long term-oriented cultures will look to adopt new technology in order to improve their capabilities in the long term. This is likely to improve their perception of the new technology in that they may view it as essential for their overall growth. This may, in turn, affect the level of effort they are willing to put into learning and adapting to new technology which may explain their positive perception about the ease of use.

Finally, training is likely to positively affect the Perceived Ease of Use of ERP system as per respondents' views. Training is likely to help people accustomed to a new way of working under the ERP systems. With continuous support, they may become skilled in using the new system and their familiarity with the new system combined with several benefits that ERP provides may make their perception of the ease of use higher. Supporting the individuals helps them in seeking help on the go as the issues might still arise, and unlike in legacy systems, people may not be able to seek support and advice from their peers and colleagues. In this respect, training can potentially boost the perceived Ease of Use of ERP systems, as was confirmed by the respondents.

4.7.3 Third regression model

Third regression model tested is given in the equation below:

End User's Extent of Usage = β_0 + β_1* Perceived_Usefulness+ β_2* Perceived_Ease_of_Use where β_0, β_1, β_2 are coefficients of regression. Figure 13 below shows the graphical representation of the third regression model

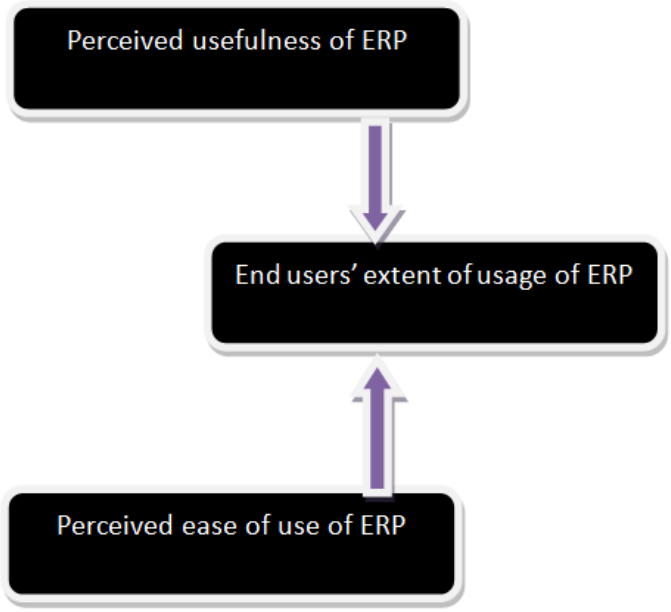

Figure 14 Representation of the hypothesis for the third regression model

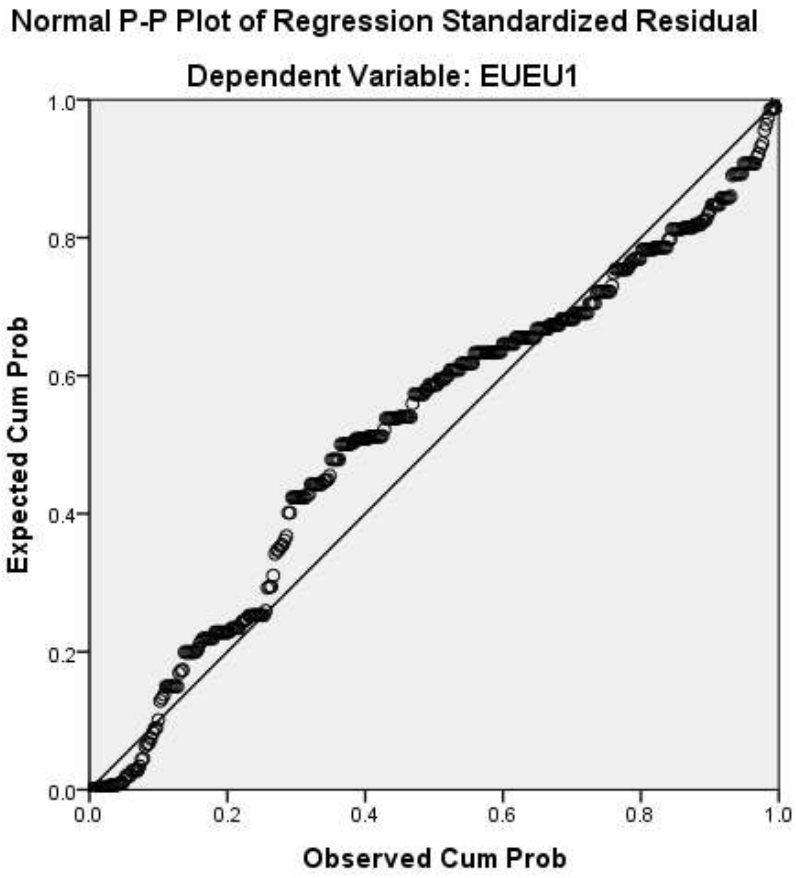

Figure 15 Normal Predicted Probability (P-P) plot for the third regression model

In the plot in figure 15, it can be seen that the residuals conform to the diagonal normality line indicated in the plot confirming that the residuals are normally distributed.

The model was tested for homoscedasticity. Figure 16 shows the scatter plot of the residuals.

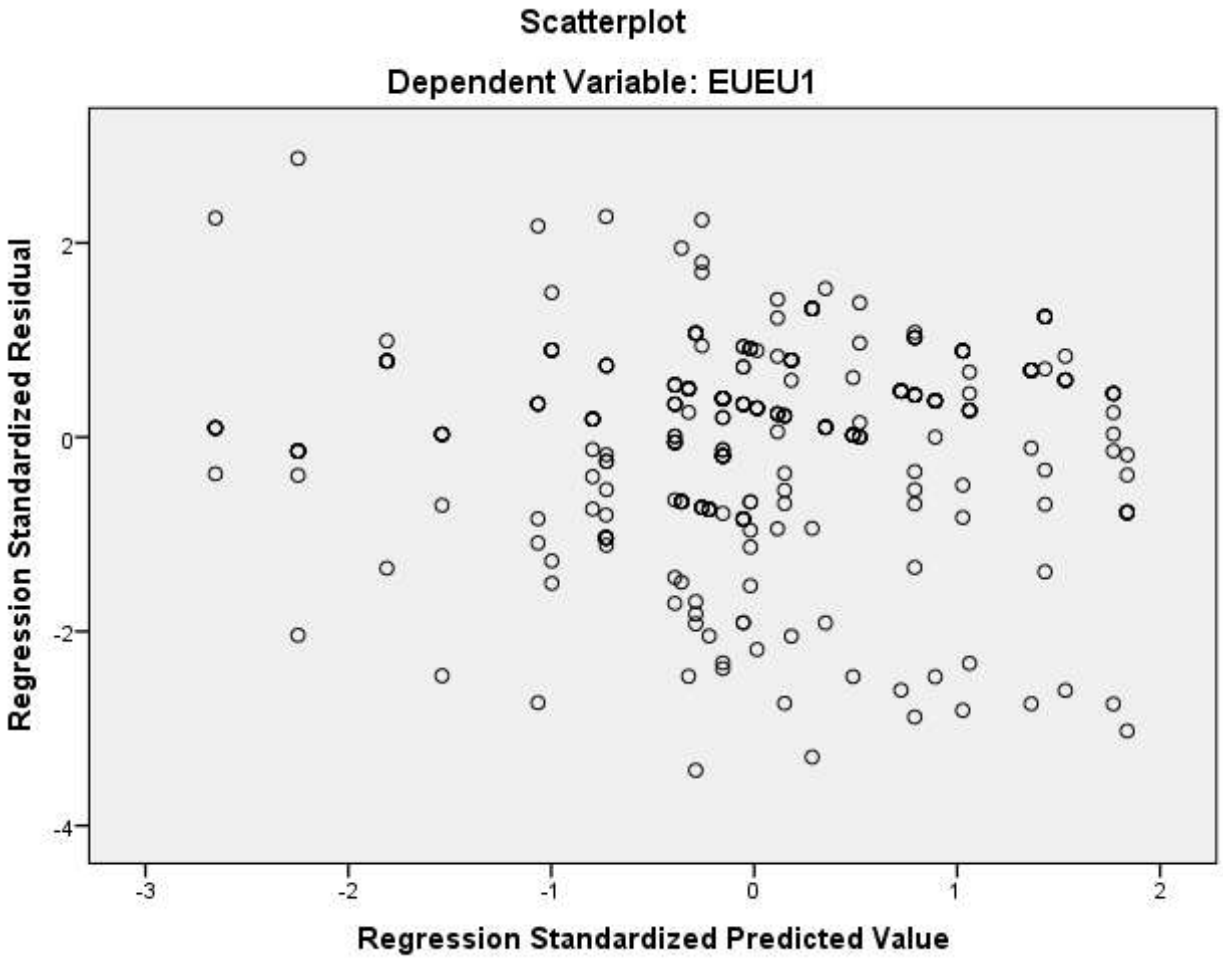

Figure 16 Residual scatterplot for the third regression model

This chart does not show violations of independence, homoscedasticity and linearity assumptions. Table 23 gives the output of the regression test

Table 23 SPSS output of the summary of the third regression model

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.509[a]	.259	.255	.562981306000000	.879

a. Predictors: (Constant), PEU, PU

b. Dependent Variable: EUEU1

ANOVAa

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	40.131	2	20.065	63.308	.000[b]
	Residual	115.052	363	.317		
	Total	155.183	365			

a. Dependent Variable: EUEU1

b. Predictors: (Constant), PEU, PU

The small difference between the values of R^2 and Adj-R^2 indicates that the sample included sufficient number of cases. Adj-R^2 = 0.255 indicates that the two explanatory variables included in the model can explain up to 25.5% per cent variation in the End User's extent of Use of the ERP.

With F = 63.308 and 365 degrees of freedom, the test is statistically significant which confirms that there is a linear relationship between the predictors and dependent variables.

Table 24 SPSS output of the third regression model

Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients			Collinearity Statistics	
	B	Std. Error	Beta	T	Sig.	Tolerance	VIF
(Constant)	.901	.255		3.529	.000		
Perceived Usefulness	.549	.054	.462	10.224	.000	1.000	1.000
Perceived Ease of Use	.280	.058	.216	4.780	.000	1.000	1.000

a. Dependent Variable: EUEU1

In the last column in table 24, it can be seen that all VIF values are less than one, which indicates no multicollinearity among predictor variables. Both explanatory factors were found to have a statistically significant impact on Employees' Extent of Usage of the ERP system.

Perceived Usefulness may positively and statistically significantly affect Employees' Extent of Usage of the ERP system. Indeed, individuals are more likely to adopt a system which they find useful. Training programs can, therefore, be aimed at boosting people's knowledge of how the system is useful for their job.

Perceived Ease of Use may positively and statistically significantly affect Employees' Extent of Usage of the ERP system. Individuals are likely to adopt systems which are

easier to use. Training programs can be useful because these allow the individuals to learn how to use the system and consequently make it easier for them to adopt the system. Such training, therefore, may improve self-efficacy, which, in turn, may improve people's chances of fully embracing new technology.

4.7.4 Summary of the regression results

The table 25 below summarises the results of the three regression tests;

Table 25 Summary of the regression results of all hypothesis

Hypothesis	Regression model	Outcome
Perceived Performance Risk affects perceived usefulness of ERP among Saudi users.	Model 1	Rejected
Perceived Social Risk affects perceived usefulness of ERP among Saudi users.	Model 1	Rejected
Perceived Functional Risk affects perceived usefulness of ERP among Saudi users.	Model 1	Rejected
Perceived Time Loss Risk affects perceived usefulness of ERP among Saudi users.	Model 1	Rejected
Perceived Financial Risk affects perceived usefulness of ERP among Saudi users.	Model 1	Rejected
Perceived Security and Privacy Risk affects perceived usefulness of ERP among Saudi users.	Model 1	Accepted
Perceived Psychological Risk affects perceived usefulness of ERP among Saudi users.	Model 1	Rejected

The cultural dimension of Uncertainty Avoidance affects perceived usefulness of ERP among Saudi users.	Model 1	Accepted
The cultural dimension of Power Distance affects the perceived usefulness of ERP among Saudi users.	Model 1	Rejected
The cultural dimension of Collectivism affects perceived usefulness of ERP among Saudi users.	Model 1	Rejected
The cultural dimension of Masculinity affects perceived usefulness of ERP among Saudi users.	Model 1	Rejected
The cultural dimension of Long-Term Orientation affects perceived usefulness of ERP among Saudi users.	Model 1	Accepted
Training affect perceived usefulness of ERP among Saudi users.	Model 1	Accepted
Perceived Performance Risk affects perceived ease of use of ERP among Saudi users.	Model 2	Accepted
Perceived Social Risk affects perceived ease of use of ERP among Saudi users.	Model 2	Rejected
Perceived Functional Risk affects perceived ease of use of ERP among Saudi users.	Model 2	Accepted
Perceived Time Loss Risk affects perceived ease of use of ERP among Saudi users.	Model 2	Accepted
Perceived Financial Risk affects perceived ease of use of ERP among Saudi users.	Model 2	Rejected
Perceived Security and Privacy Risk affects perceived ease of use of ERP among Saudi users.	Model 2	Accepted

Perceived Psychological Risk affects perceived ease of use of ERP among Saudi users.	Model 2	Rejected
The cultural dimension of Uncertainty Avoidance affects perceived ease of use of ERP among Saudi users.	Model 2	Accepted
The cultural dimension of Power Distance affects perceived ease of use of ERP among Saudi users.	Model 2	Accepted
The cultural dimension of Collectivism affects perceived ease of use of ERP among Saudi users.	Model 2	Rejected
The cultural dimension of Masculinity affects perceived ease of use of ERP among Saudi users.	Model 2	Accepted
The cultural dimension of Long-Term Orientation affects perceived ease of use of ERP among Saudi users.	Model 2	Accepted
Training affects perceived ease of use of ERP among Saudi users.	Model 2	Accepted
Perceived -ease of use of ERP affects employees' extent of ERP usage among Saudi users.	Model 3	Accepted
Perceived -usefulness of ERP affects employees' extent of ERP usage among Saudi users.	Model 3	Accepted

The results of the quantitative analysis are presented in figure 17 below;

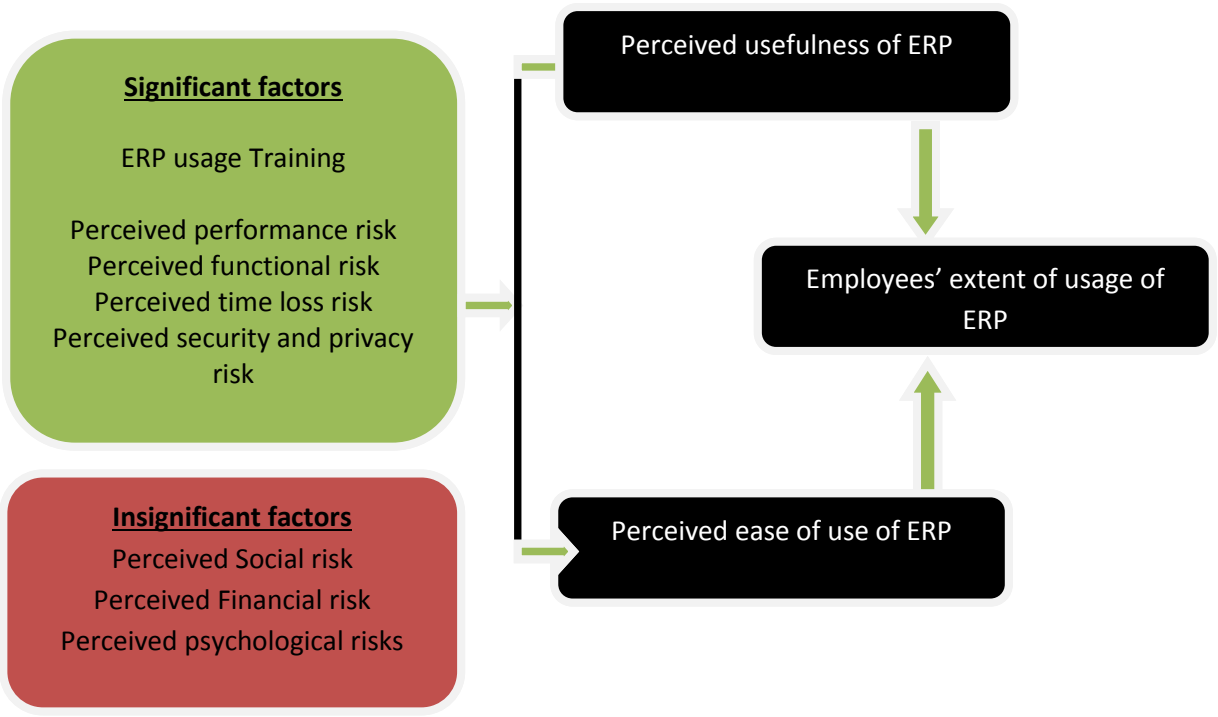

Figure 17 Outcome of quantitative analysis

As a result of the analysis of the data, the conceptual framework presented in chapter 2 can be revised as follows:

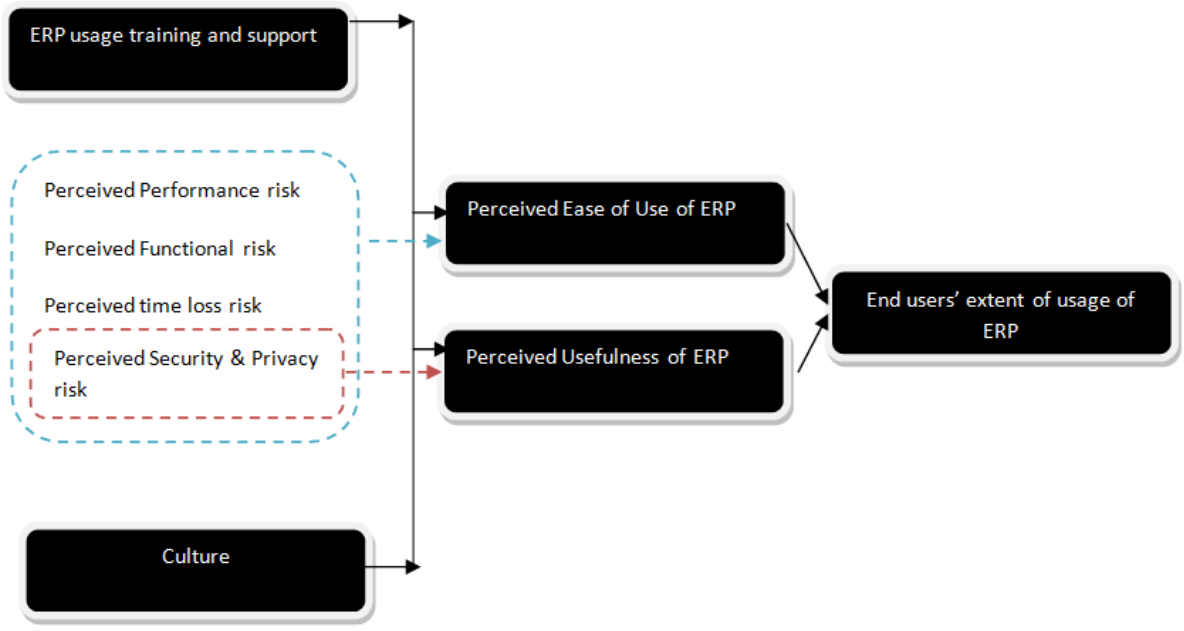

Figure 18 Revised conceptual framework based on the results of the regression tests

Having statistically tested the impact of different kinds of perceived risks and culture and training on perceived usefulness, ease of use and extent of usage of ERP the next chapter looks at the analysis of the qualitative data obtained through interviews. The sequential interviews were aimed at learning more about the findings of the questionnaire survey. The next chapter presents the thematic analysis of the interview data.

Chapter 5: Qualitative data analysis

5.1 Chapter introduction

The previous chapter presented a quantitative analysis of the survey data. Qualitative methods allow us to learn flexibly about people's behaviours, perceptions and emotions through a direct one to one engagement with the individuals. It helps us enhance our knowledge of not only what but also how and why the problem a problem exists. Qualitative data such as interviews are useful in gaining insights which are often lacking in quantitative methods because of the indirect and structured approach adopted for quantitative methods.

This research follows a sequential mixed-methods approach. The qualitative part of the study was aimed at validating the findings of the quantitative part of the study as well as to get more detailed information on the findings of the quantitative study. Thus, the qualitative part of the study aimed at explaining why certain perceived risks were found to be more significantly influencing the adoption of ERP. Furthermore, while the quantitative part concluded that training is useful in improving the adoption of ERP, it does not explain what kind of training is useful in boosting employees' adoption of ERP. Qualitative interviews in this research were aimed at further understanding how training can help in improving the adoption of ERP by reducing perceived risks in adoption of ERP. This part was, therefore, aimed at proving practical and managerial recommendations on how to use the findings of this research in order to boost the adoption of ERP in their organisation.

The sections below present the process of thematic analysis that was followed as well as the findings of the analysis of the interview data. It begins with a description of the samples, i.e. the profiles of the respondents.

5.2 Profile of the respondents

Respondents included 12 senior-level executives from four different large-scale organisations operating in retail, manufacturing, petrochemical and hospitality sectors. All these organisations have implemented ERP within the last five years, and the interviewees were involved in the ERP implementation. The profile of the respondents is given in table 26 below;

Table 26 Profile of interviewees

Respondent	Organisation type	Designation	Experience	Details of ERP used
R1	Manufacturing	Chief Information Officer	42	**Oracle** Modules: Quality of management, Manufacturing, Warehousing, HR, Accounts, Finance, Sales
R2	Manufacturing	Operations Manager (Riyadh)	22	
R3	Manufacturing	Senior HR manager	28	
R4	Hospitality	Director operations	39	**SAP + PeopleSoft** Modules: Operations, Site management, Fixed asset management, Finance, HR
R5	Hospitality	Head of IT department	31	
R6	Hospitality	HR Manager	23	
R7	Petrochemical	HR director	39	**SAP+ Oracle** Modules: Details not available
R8	Petrochemical	IT director	40	
R9	Petrochemical	Senior operations manager	28	
R10	Retail	Operations Officer	23	**SAP + Infor** Modules: Finance, Warehousing, Purchasing, Sales, HR
R11	Retail	Director of Technology	31	
R12	Retail	Senior Manager HR	23	

To get adequate representation, senior-level individuals from three different divisions within each organisation were selected for interviews. From each organisation, one individual from the IT division, one from operations and one from the HR division were selected for interviews. Such selection was selected to ensure that perspective of individuals from all divisions was included in the research as the research is focused on the impact on employees in general. A small sample number is sufficient for interviews. For example, AlMuhayfith and Shaiti (2020) conducted interviews with 5 ERP users. Tezeny (2013) conducted interviews with 27 managers who were in charge of ERP; out of this "eight of the interviewees were IT managers, eight were financial and accounting managers, six were internal audit managers, and five were other managers (plant or production managers, and an HR manager)".

5.3 Thematic Analysis

Thematic analysis is an appropriate and powerful method used when seeking to understand a set of experiences, thoughts, or behaviors across a data set (Braun and Clarke, 2012; Thorne, 2000). It is used to analyze qualitative data by searching across a data set to identify, analyze, and report repeated patterns (Braun and Clarke, 2006). At the same time, it is a powerful method for analyzing data that allows researchers to summarize, highlight key features of, and interpret a wide range of data sets (King, 2004). This subsection presents the steps that were taken to conduct thematic analysis during this research study.

Conduction of thematic analysis

Several researchers have published descriptions and guides of how to conduct different versions of thematic analysis (Aronson 1995; Boyatzis 1998; Attride-Stirling 2001; Nowell, 2017; Joffe, 2011). In this study, guidance for thematic analysis was based on the method as outlined by Braun and Clarke (2006) since it has become the most widely adopted method of thematic analysis within the qualitative literature (Braun and Clarke, 2014).

This method of analysis consists of six steps;

1) Data familiarization
2) Generation of initial codes
3) Searching for themes
4) Reviewing themes
5) Defining and naming themes
6) Producing the report.

Step 1: Data Familiarization

This was the first step in the process of thematic analysis. It basically involved becoming familiar with the entire data set, which entailed repeated and active reading through of the data. This provided a valuable orientation to the raw data and was foundational for all subsequent steps.

Step 2: Generation of initial codes

Coding enabled proper organisation of primary data. At this stage, notes were taken by the researcher on potential data items of interest, questions, connections between data items, and other preliminary ideas.

This phase of work generated codes, not themes. Boyatzis (1998) defines a code as '*the most basic segment, or element, of the raw data or information that can be assessed in a meaningful way regarding the phenomenon'* (p. 63).

Sufficient care was taken to ensure that each code was sufficiently well-defined and demarcated such that it did not overlap with other codes and fit logically within a larger coding framework.

Once the coding framework was defined, the researcher then applied the same codes to the entire data set by labeling data extracts with relevant codes, making note of any potential patterns or connections between items that informed subsequent theme development. Coding was manually done. Once the entire data set has been coded, the data was then collated by code to make it ready for searching for themes.

Step 3: Searching for themes

At this stage, the coded and collated data extracts were carefully examined to identify potential themes of broader significance. Varpio et al. (2017) states that themes do not simply emerge from the data; instead, themes are constructed by the researcher through analyzing, combining, comparing, and even graphically mapping how codes relate to one another. Thematic maps were useful in visually demonstrating cross-connections between concepts and among main themes and subthemes.

Step 4: Reviewing themes

Here, the researcher looked at coded data placed within each theme to ensure proper fit. All relevant codes and data extracts under each theme were reviewed to verify whether

each theme had adequate supporting data and whether the data was coherent in support the respective theme.

This review helped to identify which themes would eventually be kept, discarded, or otherwise modified in the final analysis. At this point, data extracts were re-sorted and themes modified to better reflection and capture coded data. Thereafter, the same checks and verifications that were done on the themes were then applied to the entire data set.

Decisions were then made on whether the themes were deemed able to fit meaningfully within the data set and whether the thematic map accurately represented the entire body of data. To accomplish this task, the entire data set was re-read to re-examine themes and to re-code for additional data that was deemed to fall under the themes that had been newly created or modified in this phase. This provided basis upon which the thematic map was accordingly revised.

Step 5: Defining and naming themes

After refining the thematic map in the previous step, this stage involved creating a definition and narrative description of each theme. The names of themes to be included in the final report were reviewed to ensure they were brief and adequately descriptive.

Thereafter, the researcher delved in on the most important aspect of each theme and which aspects of the data set it covered, creating a coherent narrative of how and why the coded data within each theme provided unique insights, contributed to the overall understanding of larger questions, and interacted with other themes. While addressing these concerns, the researcher looked for areas of overlap between themes, identified emergent sub-themes and clearly delimited the scope of what each theme entails or includes. At this stage, data extracts to be presented in the final report were also selected.

Step 6: Producing the report

This was the final step that involved making a write up of the final analysis and description of findings. Ideally, the previous stages contributed to this write up based on the notes that had been taken, the themes that had been described and the representative

data extracts that had been identified. In fact, King (2004) describes this step as a continuation of the analysis and interpretation that has already happened from the prior steps. The researcher based on both narrative descriptions and representative data extracts like direct quotations from participants to describe the data and provide an argument for why the researcher's explanation richly and fully answered the research question.

Following this analysis, the following findings were noted.

5.3.1 Perceived Psychological risk

Psychological risk is the perceived risk of any undue stress that may occur due to use of ERP. 10 of the 12 respondents spoke about the stress and anxiety that users might face in using ERP, especially at the beginning. Psychological risks such as expected rise in errors are common in case of change and may lead to resistance from employees. As R2 responded: "*This is one of the main issues we face. There is a lot of anxiety and stress because ERP implementation basically involves a significant overhaul of things. It is not easy for people to get used to doing things in a new way that easily*." R7 also commented "*it is very stressful for people who have been using one system for many years and have to suddenly switch. You will see even most experienced individuals struggling and taking time to learn."*

ERP implementation affects most employees as they have to learn to do things in a new way or even to learn doing new things as ERP implementation may lead to some degree of role change. Such changes may lead to anxiety and stress, especially from individuals who have long accustomed to doing things in a particular way. R11 also suggested that "*of course there is stress and anxiety. But that would be with any change not only ERP. But I do agree that ERP in particular, is very stressful because it changes the way things are done. It is like re-joining the company as a fresher and beginning to learn things*." R9 provided more insight into this and commented "*surprisingly you will see experienced professionals more concerned than the frontline ones*." Furthermore, he commented that "*it may seem surprising because their work is often not as much affected by ERP implementation as compared to front line employees.*" When probed further, he explained that It could be because less experienced individuals are often younger individuals who are technically more proficient, making it easier for them to adapt to the new system. Also, being less experienced may work to their advantage as they find it easier to switch to the new system.

On the other hand, individuals who are accustomed to doing things in the old manner and are well versed with the legacy system may find it difficult to switch as they may have to unlearn a lot of things. Having to unlearn things may prove more challenging for some individuals than learning new things, and this may be the reason why more experienced individuals may exhibit resistance to the new system. The new system may also alter power dynamics within the organisation as all employees, new and experienced, have to learn the new system. This may erode some of the experiential advantages that experienced individuals my hold over their juniors.

Respondent R3 commented: "*ERP has some risks because unless we are conformable with it will always be possible to make risks. This kind of worries the users. It is like driving- you will be worried till you become comfortable and confident*." Respondent R9 commented "*one of the problems with ERP is that lot of work is done by the system in the background. Now we are used to seeing it so it may be worrisome whether what the system is doing is in line with what we were expecting it to do. Till we confirm this somehow it becomes stressful.*" When asked about R5 about such issues, he commented: "*I don't think it is an issue, but it could be that the individual does not need where to look for confirmation. ERP is a well-developed system with very little uncertainty, but some individuals may not know how to use it properly.*" R5's comment indicates that if individuals are trained to use the system it may lower the perceived psychological risks in ERP adoption.

One interesting aspect that emerged from the interviews was that both people from both IT and non-IT roles suggested that there was some degree of psychological risk involved in adapting to ERP. Respondents from IT department mainly expressed concerns about people expressing anxiety and stress due to issues such as differences between legacy systems and ERP and not knowing how to fully use ERP system while respondents from non-IT divisions mentioned their own episodes of anxiety and stress. Despite the respondents suggesting that ERP usage may lead to some degree of anxiety and risks, none of the respondents indicated that it affected their adoption of ERP. Instead, the respondents suggested that they need to be better prepared in order to manage any risks; they agreed that often the stress and anxiety is because they are unsure of what is happening in the ERP system due to high degree of technology involvement. This confirms the findings of the questionnaire survey that perceived psychological risks may not have a significant impact on employees' adoption of ERP. At the same time, the

responses did indicate the fact that adequate training is likely to lower perceived psychological risks in usage of ERP.

5.3.2 Perceived Performance risks

8 of the 12 respondents mentioned that performance risk is one of the key risks that affect perceived risks in adoption of ERP. R2 commented: "*one of the things that will definitely worry individuals is whether the system will work as well as the old system*." R12 commented: "*not many changes for us, but we know that for people in other departments such as operations it brings in significant changes. And they will be of course worried if something goes wrong*."

ERP is expected to reduce uncertainty and improve information flow. However, technical glitches can lead to unexpected outcomes. R4 commented: "*in old systems, users know how to manage their work even if there is a problem. They have used simply so long that everyone is a trouble-shooter. But ERP changes everything because users don't know how to use it, let alone trying to fix something. No one wants to take any risk because they don't know what will happen*." R5 also commented: "*there is always a perception that the system would malfunction. It could be because people may not trust the system itself, or they may think that they will make a mistake in using the system*." According to the respondents, lack of knowledge of how to use the ERP system accentuates the perceived performance risks.

R11 commented: "*one of the problems which make things worse is that some users find ERP system very different from their existing systems, so they think it is something completely new. This makes it even more worrisome for them*." Similarly, R12 commented: "*lack of flexibility is the main issue in ERP. Even people who know their organisation and their work like the back of their hand but ERP changes everything for them. They know what they want to do but often not how to do it. So that affects their view of the system as well as their ability to do their work."*

R18 commented: "*I think one of the problems is that the way in which ERP system is laid out is somewhat confusing because some of the components appear even though they are not required an all. It is something that may confuse people*." The main issue with ERP is that standardisation of interface can confuse users who are not used to seeing some of

the component. For example, R4 commented that "*ERP shows so many options that I know nothing about and does not show some options that people want. Maybe it is renamed but unless people know what can they do*."

According to R10: "*ERP as software may work fine, but if you think about our work as a system, then you will understand whether ERP truly adds value or not. So, you can look at whether all individuals have access to all updated information whenever they want. For example, if my system is down, then it's not a good system."* Another respondent (R12) also mentioned that the if the individuals can do their job better with ERP then it's a good performing system, but if using ERP leads to poor performance then ERP is not a good system, at least for that organisation. He exemplified "*if you give a fast car to a bike rider who does not know how to drive then what's the point of a fast car. You rather get him a faster bike. ERP must lead to an improvement in actual performance; otherwise, even paper-based systems are fine.*"

While most respondents suggested that ERP systems have a moderate to high perceived performance risk two from IT divisions disagreed. R1 commented: "*I don't think there are any issues with ERP. There were in the past, but it has evolved so much, and implementation is so advanced now that almost all issues have been sorted. The only thing is getting people used to this system.*" Similarly, R8 commented "*no system is perfect, but ERP is a very good system. Technology gives us good control and predictability. People know exactly what they have to do everything is organised in a way where everyone knows everything. So, performance is likely to improve not deteriorate with ERP.*"

When asked about whether in their opinion, perceived performance risks affect people's adoption of ERP 8 of the 12 respondents agreed albeit to different extents. For example, R3 commented: "*for sure many individuals who are too worried about the system not working as they wish are likely to try and find ways to avoid using the system*." R7 recollected one incident "*One HR manager from our Dammam office emailed me one report one day saying he was just sending it for confirmation after entering information in ERP system. In fact, he did not enter it in the ERP system because I could see his log. He was just avoiding to use the system even though it was more work to prepare the report in the old way*." R4 commented: "*not everyone will avoid using the system but do you really want to force people to use a system that they are not interested in or they are*

scared off. Don't you think it will affect their interest in work?" R4's comment was an interesting aspect because he highlighted that even though employees may adopt ERP, lack of interest in using ERP may affect their performance in terms of efficiency etc. R4 commented that providing more support to people will help in reducing perceived performance risk.

R7 commented: "*employees get used to the system. If they are already used to a system, which according to them has no apparent problems, then, of course, they will not like to use a new system.*" According to the respondents, conventional systems are tested, and people have become habitual in using them. Thus, these systems are easier for them even if these are not as sophisticated as ERP. With this argument, it can be suggested that training can be a useful addition in this regard because it will help individuals get used to the new system thereby reducing the uncertainty that may be leading to higher perceived performance risk. R11 provided a valuable insight into performance problem can be overcome. He stated: "*When we train employees, we need to train them exactly how to do things. The problem is we have a lot of generic training, so people are often trained on how the system works but not on how to exactly do the things that they want to do.*" Furthermore, R5 also commented: "*ERP training should be individualised and extended, so people know exactly how to use the system*." Furthermore, he commented: "*it is not possible for people to learn everything within a short time period, so it is essential to provide them long term support to ask anything about the system. We need to give them the cushion which they feel will protect them from any fall."*

The responses, therefore, confirm the findings of the questionnaire survey that perceived performance risk has a negative impact on the employees' extent of usage of ERP and that training may be a useful intervention in reducing the perceived performance risks and consequently, in improving employees' extent of usage of ERP. Perceived performance risks can be reduced by training individuals specifically for their roles. Individuals are not concerned as much about the overall system as they are about their own tasks. As long as they can adequately perform their tasks using the ERP system, individuals are likely to be satisfied and consequently more likely to use the system.

5.3.3 Perceived social risk

Nine interviewees agreed that there is some degree of perceived social risk in the adoption of ERP. Interviewees spoke about two kinds of perceived social risks in adoption of ERP: the first one is the perceived risks of restructuring of social network and the second one is perceived risk of some embarrassment resulting from the incorrect use of ERP. Saudi Arabia is a collectivist society (Hofstede, 2015) so there is a strong possibility of people forming personalised social networks with their colleagues; in other words, there may be a strong overlap in the personal and professional networks of individuals. ERP may often lead to restructuring within organisations which involves moving of individuals across divisions (or even layoffs). Such changes which inadvertently affect the social networks of individuals are likely to be resisted by individuals, especially in collectivist societies like Saudi Arabia.

Respondents agreed that adopting ERP may lead to some perceived social risks, but they also suggested that these may not be high unless there is a significant level of restructuring. All three HR managers suggested that perceived social risk may be high in case of ERP implementation. As R3 commented: "*I came across any people who kept on asking me about whether they will be made redundant or moved to a different department. I think people are worried about losing their job and connections.*" R7 also suggested something similar: "*I had so many employee enquiries around the time of implementation of ERP. People were asking if the need to get some training or certificates to retain their jobs, people asking what will happen to their job, will they be moved or made redundant. It was a huge issue, especially for the HR department, because employees seemed to be in a panic*." One interesting instance was recalled by R9: "*I heard some people trying to team up and hire someone to teach them the ERP system. I came to know because they enquired if the cost will be covered by the company or not. This is the height of uncertainty.*" These comments show that Saudi employees often view ERP implementation as a collective social risk which requires collective action from them.

There were some other social risks that were mentioned in the interviews, such as the perceived risk of embarrassment caused by incorrect use of ERP. R6 expressed some concern about perceived social risks: "*No one wants people to think that he is stupid. So, if he has an issue with ERP, he may not discuss it with anyone."* R8 also commented: "*When people hear stories about some serious issue that may have happened because someone could not use the ERP system correctly, it may lead them to be scared to use the*

system." R1 commented: "*people may avoid using ERP if they can if they think that it will cause them some embarrassment, for example, if they do something which others think was stupid.*" Indeed, in a collectivist society like Saudi Arabia, people often base their actions based on social perceptions and in such cultures, people may avoid actions that could potentially result in embarrassing situations.

According to the respondents, while perceived social risks may affect employees' perception of the overall risks in the system, it may not significantly affect their decision to adopt the system. As R6 commented: "*Of course people are not happy being in different teams but I don't think they will leave their job just because they are being put in a new team.*" R10 also commented: "*No matter what people feel they eventually get used to this. This is not ideal but needs to be done.*" Other respondents also suggested that while restructuring leads to some discontentment amongst the employees, but it does not lead to any significant withdrawal. Furthermore, such restructuring hardly involves the significant breakdown of social networks because individuals still work around each other. One of the problems that could happen in such cases is "*individuals may lose their support. Many individuals work in cooperation with others so if we restructure people have to develop the same rapport, understanding and teamwork with new individuals and it takes time. Sometime people may not even be ready for this so such disruptive restructuring may lead to some reduction in team working and even employee morale*" (R9). Thus, social risks may not affect people's adoption of ERP per se, but it might affect their willingness, interest, motivation to use ERP or may even affect their efficiency.

In terms of solutions to the rise in perceived social risks with implantation of ERP individuals provided different suggestions. R7 commented: "*one thing we can do is avoid significant shifts in people's positions, so even if there is a change in social networks it is not too extensive.*" R12 commented: "*we can separate work from personal relationships by giving individuals alternate space and time to socialise. This way, there will be little perceived disruption in their social networks of individuals.*"

R8 commented "*exhibiting greater tolerance for mistakes at least in initial periods can provide people with the confidence of using the system. Also highlighting the common mistakes made by individuals in ERP will not only warn the users of avoiding the common mistakes but will also highlight the fact that making mistakes in using ERP is not*

uncommon. This will lead to a reduction in the perceived embarrassment that individuals may feel in using ERP.

The questionnaire survey revealed that perceived social risks do not have a significant impact on perceived ease of use and perceived usefulness of ERP. Even in the interviews, the respondents did suggest that while perceived social risks are disappointing for the management, but it may not deter them from using ERP except in a few exceptional cases.

5.3.4 Perceived financial risks

Financial risk originates from the likelihood of incurring a financial loss as a result of using ERP. Most of the respondents disagreed that they perceive financial risks in adopting ERP. For example, R8 commented: "*I don't think there are any financial implications unless there is some cheating because if there is some error in anyone's inputs, the system will eventually detect it*." R12 also had a similar view: "*no financial issues. What could be the financial risk to anyone in using the ERP? I have never heard anyone complaining of anything like this*."

Respondents had little or no comments to make when asked about perceived financial risks in using ERP as they unanimously rejected the possibility of any financial risks in adopting ad using ERP. Consequently, no further questions were asked on whether perceived financial risks could affect employees' adoption of ERP and whether these perceived financial risks can be reduced through training. Questionnaire survey also revealed that perceived financial risks do not have any significant impact on end user's adoption of ERP as it neither affects perceived usefulness of ERP not does it affect perceived ease of use of ERP. This could be because there are no financial implications for the employees if they make a mistake in using ERP.

5.3.5 Perceived Time loss risk

When asked about time loss risk interviewees' responses could be categorised in two categories: firstly, ERP is expected to reduce time loss by speeding up the transfer of information and secondly it may lead to significant time loss when things do not go as planned. Regarding the reduction of time delay in information sharing, R1 commented: "*ERP makes everything quicker. You have all the information you need any time you need, and you don't have to ask anyone for it. In the past, it sometimes took days for people to*

receive information from other people. But now they don't have to even ask. Information is there round the clock." R8 also commented: "ERP makes things quicker if anything. You cannot think that ERP causes a slowdown. But if people are taking time to use ERP, that is a different matter altogether." R11 also commented similarly: "*The main reason why we have ERP is that it makes it easier for people to send and receive accurate information. So how can you say that it causes time delay?*"

However, not all of the respondents agreed that ERP leads to an overall reduction in time taken for each process. They stated some reasons which can cause a time delay in ERP. According to these respondents, ERP can cause time delay if the users don't know how to use it or if the system does not act as expected. R12 explained the possible causes for the delay stating that it is not the ERP system itself but how the system is used. He stated: "*the problem is that many people do not know how to use the system and that is what causes the delay*." R3 had a different explanation: "*people sometimes put the information incorrectly, or they may not put the correct information. Either way, it causes a bottleneck causing the delay down the whole process line.*" R9 also suggested something similar: "*many times people sit on the information no knowing how to put it in the ERP system. This causes a problem because everyone down the line is dependent on that information. In the old system, people had the option of seeking the information that they wanted, but in ERP they sometimes don't know who is going to provide that information and even how to ask for it.*" When asked about these issues one of the respondents from the IT division (R11) commented: "*that's not true. ERP has a messaging system so you can send message to users if you want information or anything. It's all logged, so everyone knows when you asked or the information*." He furthermore commented: "*the problem is that we are so much used to informal way of working- talking in-person to each other and all, so we find it too complicated and useless to use the system to do so. I mean, how would you react if we say that now you will communicate with each other using a computerised system? It's not or culture*." These responses indicated that there is a possibility that lack of knowledge of how to use ERP system correctly and completely could lead to some time delay risk in the use of ERP. There is, therefore, some possibility of reducing perceived time loss risk by training individuals on how to adequately use ERP.

When asked if perceived time loss risk will affect employees' adoption of ERP, five of the twelve respondents agreed while six were unsure. R2 agreed and commented: "*if users think sending information through ERP will cause delay then they are likely to revert*

back to the old system which I think will affect the extent to which ERP is used in practice." R10 also commented: "*I have seen cases where people instead of seeking information through ERP have been asking individuals personally about information. They either do not know how to do this using ERP, or they are not willing to trust ERP to do this.*" R8 was unsure and suggested that "*it is possible that some people may swing back and forth between using the old system and new system, but I think eventually all the information is getting entered in ERP. Who is doing it- those who are supposed to provide it or those who need it is not sure?*" When asked about this R11 explained: "*in any large-scale system when you implement it there is bound to be a transition period when people go back and forth as they get used to using the new system. Complete adoption of a new system will take time, and during that transition time in most cases people tend to occasionally use old methods as they may be unsure of how to do certain things using new methods*." His comments indicate that using the old and new system simultaneously is an inevitable aspect of ERP implementation. However, such practices are also likely to prolong the implementation of ERP with two competing systems in place. Eliminating the old system could lead to dissatisfaction and panic among users.

When asked if training could lead to a reduction in perceived time loss risk, all of the respondents agreed that it might be helpful. As R5 commented: "*indeed this will be useful because if people know how to do things then they will be more confident and there is likely to be less time delay. ERP definitely reduces process time if used correctly, and training can help them in using it correctly so yes.*" R12 also agreed and suggested, "*proper training to use ERP is the best tool in helping people reducing time lost in my opinion.*" Thus, the respondents were unsure if perceived time loss risk will affect employees' adoption of ERP, but they strongly agreed that training is helpful in reducing time loss risk.

5.3.6 Perceived security and privacy risks

Most of the respondents disagreed that they perceive security risks in ERP. R2 commented: "*if there one thing that most will not argue about is the security*." R6 also commented the same: "*security is not at all an issue in ERP. Also, if this is an issue, it does not affect people because managing security is the job of the organisation.*" R8 also commented: "*ERP is a very good system. I mean if you look at vendors like Oracle, you*

know they have taken care of issues like security. I don't think there is a lot of worry about this." R9, however, suggested that ERP does have some security issues: "*ERP is a technical system, and like any other technical system, it has security issues. It does worry me because if something goes wrong, our whole system will come to a standstill.*" R11 commented: "*one issue can be when people log into the system remotely. There could be some challenge there because if the system they are using is compromised, it can allow unauthorised individuals getting access to the system."* R8 also suggested that when individuals access the system using personal computers, then it could be problematic because they may not have adequate protection against malicious attacks.

In terms of privacy risks, most respondents suggested that privacy risks are not critical in ERP because they do not have any personal information on ERP. They, however, suggested some issues with the one most commonly cited being losing login details. R1 commented: "*I am always worried that someone might come to know of my login details and can do things without my knowledge.*" R3 also suggested that "*protecting your login details is one issue for many individuals. This basically can give others access to all the information that only you should know. Someone can enter some information without your authorisation, and then you become liable for their actions*." While respondents did highlight some concerns regarding privacy risks, but none of the respondents suggested that this might affect users' adoption of ERP. As R10 commented: "*when worse happens it will make people more worried and careful, but I don't think security and privacy are issues which will deter people from adopting ERP.*" R12 also suggested the same: "*people will be worried of course, but I don't think it will make them use it less or not at all.*"

All of the respondents agreed that training could be helpful in managing security and privacy risks. R4 commented: "*training people on how to manage the security of their accounts is definitely helpful. It gives them more confidence also*." R12 also suggested: "*it will help in reducing their worries in using the system if nothing at all.*" R1 commented: "*I got a message from the system to clear my cache when using the system from outside company locations. It took me two days to figure out what it means and how to do this. A little more training on this would have been helpful*."

Thus, the respondents agreed that there are some security and privacy risks in ERP, but they did not agree that such risks affect employees' adoption of ERP. Furthermore, the

respondents agreed that training is useful in helping people reduce security and privacy risks in ERP.

5.3.7 Perceived functional risks

In addition to the risks that had been discussed in the interviews respondents also spoke about functional risks. These functional risks mainly related to the technical issues (i.e. system reliability) can affect people's ability to function or may affect one of the respondents (R6) commented: "*After all ERP is a technical system and there can be failures. These failures can be catastrophic if the information is all and only stored on ERP*. What will we do if we have no access to any data or information?" R9 had similar views: "*If I fall sick only my work and of those whose work is dependent on mine get affected. If ERP goes down the whole organisation may come to a standstill. This is the main problem.*" Thus, one of the key concerns that the respondents had was that being totally reliant on the ERP system means that if for any reason the ERP system is not available, it will affect the ability of employees to work.

Respondents were asked to reflect back on their experiences of using ERP and what issues they faced. R12 commented: "*there were many times when the system crashed in the middle of the process. Now I wasn't sure how much of it has been saved because I did not want to create double entries. Worse I did not know how to check what has been saved."* R5 also commented: "*I have had heard many instances when the system crashed just before the task was almost done. Now the person had to do everything all over again. This was never an issue with the old system because we could manually check what has been saved and continue from there*." R2 recollected that he had to send an urgent invoice to a buyer in China and the system did not allow him to log in. According to him "*it was dead essential for me to send it then because failure to do so would have caused over 3-million-riyal loss to the company. I could not log in. I travelled to three different locations because it was weekend in Saudi but not in China. Of what a panic it was. I probably have never been more stressed in my life.*"

These responses indicated that the poor reliability of the system is one of the factors causing concern for the employees. When asked whether it might deter users from using ERP, most of the users suggested that such risks are very likely to affect employees' usage of the system. As R2 commented: "*if a system is not reliable, then anyone will be less*

likely to use the system." R4 also commented the same: "*if users think that the system is not reliable, then they are likely to go back to doing things manually. For humans to use any system, it has to be reliable.*" In fact, all of the respondents agreed that the reliability of a system is a significant determinant of whether users are likely to adopt it. R8 commented: "*even for organisations there is no point in having an unreliable system because it can cause chaos. ERP is a reliable system, but we can imagine the chaos that will be caused if an organisation will implement a system which keeps on crashing*." Almost all respondents stressed the need to have a robust system, and in addition, R10 commented: "*ERP like any other system can have its ups and downs. So, what we need is proper education of people on what to do if the system crashes such as who to contact and what action to take. This is somewhat missing I think in the ERP training programs.*" R4 also suggested that knowing what to do in cases when a system goes down is essential because "*users are not so technical as to know what to do. They have to be taught properly, and there should be constant support available for them to overcome such issues whenever they arise.*"

5.3.8 Cultural factors

Out of Geert Hofstede's five dimensions of cultural index, the one that most people referred to indirectly was the 'uncertainty avoidance'. Most respondents suggested that they were quite concerned about the high degree of uncertainty even though the ERP system is supposed to reduce the uncertainty. Saudi Arabian culture ranks quite high on uncertainty avoidance indicating that Saudi individuals tend to avoid risk and uncertainty. As respondents R4 commented: "*Knowing how the system works is absolutely critical to me. In past I did most of the work so I knew as I could see it. Now because of the background processing in ERP it becomes somewhat uneasy for me."* Most respondents mentioned that uncertainty, at least in the earlier stages of ERP adoption made them quite uncomfortable. One of the respondents commented: "*many times I receive emails about different modules being updated and I don't know how it affects my part of the information. It is always a panic for me."* Respondents suggested that one of the problems with ERP is that even small change affects the whole system and this means that everyone is concerned about updates even though it may not actually affect them. Respondents suggested that ERP systems should be designed in a manner that it should not affect the end user. One of the respondents recollected: "*We have a sales module. When Saudi*

government announced the VAT of 5%, all our stock prices had to be adjusted. ERP created a conflict with finance division because we were not sure which products the VAT burden will be transferred to the buyer and which will be borne by us. System updated all the prices and even the invoices go altered and customers were complaining about the prices decided an all. It was big confusion."

Some of the respondents also talk about social aspects of ERP adoption which may indicate collectivist nature of Saudi culture affecting people's adoption of ERP. For example, R2 commented: "*I really feel disheartened to see some of my colleagues struggling. These are the same colleagues I used to go to seek advice and help when I was stuck. Now to see them struggling just because they don't know ERP too well is really disheartening."* R5 commented: "*I see a lot of panic and unease among people. Many people are just not god enough using computers. You cannot blame them. They have given the best years of their life to the company and have contributed a lot. Now how do you treat them- company needs ERP but you cannot forget what they have done for the company."* These responses were in contrast with the findings of the questionnaire survey, which revealed that collectivism aspect of Saudi culture does not have a statistically significant impact on perceived ease of use and perceived usefulness of ERP. This could probably because of the manner in which the questions were structured. Structured questions can obtain limited information on sometimes broad topics. This further supports the researcher's decision to conduct follow up interviews to obtain in-depth information for this research.

One of the collectivism aspects that the respondents spoke about is losing that human touch, i.e. being able to contact a person they know in order to complete their task. With everyone being done on the system, the need for human interaction to complete the work is minimal in ERP. This is something that may make some individuals feel isolated and deprived of human interaction, as R10 commented: "*ERP is not as enjoyable because you feel like a robot. We Saudis like to interact with others. Where are my friends*?" R2 also suggested that with ERP people may feel too mechanised, "as *mere imputers of data rather than decision-makers*." As per R7: "*ERP is too standardised. Saudis like standardised things but they also like a little bit of control. ERP makes you feel like the system is controlling you rather than you managing the system. So, you feel worthless that you have to just input the data irrespective of your knowledge or experience*."

Some of the issues also related to the perceived level of monitoring under ERP as everything is time logged. Individuals may feel a lack of control because everything is being logged into the system under their name. As R9 commented: "*with ERP people are always scared because everything is time logged. So, it is like you are constantly watched-what you are doing, how you are doing it, when you are doing it and all. This is not comfortable for many of us.*"

There was also an issue of help seeking-some respondents suggested that individuals may not be comfortable with the kind of help system that ERP has. As R7 commented: "*many people don't like looking at a whole list of help questions and then asking for help online. They like a quick one to one session with a human being to tell him what's wrong and ask him what to do.*" Thus, he suggested users should be able to seek help from individuals rather than relying on the system to help them. R6 suggested that having human interaction is one of the preferred things for the employees. According to him "*sometimes when I made mistakes, some of my colleague will pick it. Now the system records it. The whole feeling of relying on each other, working with each other, interacting with each other is just disappearing*." Another respondent commented: "*In ERP I may be working with a user for years without actually seeing them even once. It's not the same anymore. I miss knowing my team members the same way.*" In total nine respondents suggested that lack of human interaction in ERP is uncomfortable for them.

5.3.9 Training

Users were asked to comment on the training they received for ERP usage. Users spoke about different aspects, but the one most commonly stated was the nature of training which was too generic for the users and did not cover specifically their role.

R2 commented: "*We received training on how to use ERP. It was too broad and general, so I was learning not only about ERP, but I was also learning to do many things which are not part of my job. It was too confusing."* R4 also commented similarly: "*the training was not focused. I just wanted to know how to do my job on ERP not how to do everyone's job on ERP.*" When asked about this R11 suggested that due to the scale of the organisations it is not possible to individualise training, and hence organisations tend to provide generic training with individuals expected to learn only the part specific to their role. However, R12 complained: "*ERP also affects the roles of individuals somewhat so*

how do people know what they need to learn and what they do not need to learn." Furthermore, he commented: "*have you ever been to a class and told that you need to identify and learn only 15 minutes of a lesson out of the 7-hour lecture. This is surprising.*" Thus, one of the things that were cited as a major issue by the respondents was lack of focused or individualised training which made it difficult or confusing for them to understand how to perform their tasks with ERP.

Respondents also spoke about insufficient training, especially in terms of how much time the trainees get to learn the new system. R3 complained: "*you want someone to learn a completely new system or I should say a new way of working with just ten days of training. That's unimaginable. People are bound to make mistakes, and they will be rightly worried about this."* R6 also complained that "*training sessions are too short and cover too much which means a lot of individuals are left with insufficient knowledge of how to use the new system*." On a similar note, R10 commented: "*I think the training was too short. Many of my team members were left with more questions than answers after the training. The problem is that ERP trainers think we are technology experts, but we are not."* Furthermore, he commented that *"this problem especially affected older experienced individuals who found it difficult to follow through the training program.*" Three more respondents complained about crammed up the training program. R12 complained "*if someone misses a training day because of illness or something then it is all doom and gloom. There were not enough training programs, and individuals had no flexibility. I think it as more cost-cutting or lack of understanding for the ERP implementation team to understand what challenges people will face.*" Thus, duration and planning of the training program was also inadequate as per the needs of the trainees. R4 provided a recommendation in this regard: "*they should have discussed with senior managers or department heads to design the training program because they may know about ERP, but they don't know as much about the trainees, what they want to learn and what is the best way to teach them.*" Thus, according to R4, the involvement of senior managers in designing of training programs can be a useful way to improve the effectiveness of the training program whilst other respondents suggested providing extended training so individuals can get accustomed to using ERP.

In terms of help and support, most individuals suggested that providing a human front to help individuals, especially in the early days after implementation of ERP is essential. As R7 suggested: "*till people get used to ERP they need to provide some human support*

because online support is not enough for people who are struggling to use the ERP system in the first place." R10 also suggested: "*if people are expected to seek support through the online system, it is further frustrating for them considering that they came to look for help because they were already facing problems.*" According to four more respondents, it is essential to provide extended and human support in the period immediately after the implementation of ERP, and this support can be gradually scaled back as the number of reported issues goes down. This will allow individuals to get used to the new system with adequate training during the transition process.

5.4 Chapter Summary

This chapter draws together the main points emerging from the qualitative analysis. Following the qualitative analysis of the interview responses, the following points were noted;

Perceived performance risk can negatively affect the adoption of ERP in the context of the perceived ease in using the new technology. This means that ease of use can be improved with effective training, thereby eliminating performance risk.

Whereas social risks are disappointing for the management, it may not deter them from using ERP except in a few exceptional cases.

Employees are usually worried about the functional failure of the system, which may create a barrier in perceived ease use of the ERP. This means that training can help in reducing perceived Functional risk by enhancing knowledge of employees towards the new system.

Individuals from technology backgrounds consider that ERP helps in reducing time loss, but time loss risk can be quite high for technical people if something goes wrong. Individuals not knowing what to do can cause bottlenecks in implementation. Training can reduce perceived time loss risk, and the barrier towards achieving perceive ease of use can be prevented.

There is little perceived financial risk in adopting ERP, and therefore, it does not affect employees' adoption of ERP. Training reduces the financial risk of project failure for the organisation. For employees, training does not affect perceived financial risk.

Perceived Security and Privacy Risk can negatively affect the adoption of ERP because it creates a barrier for the users in achieving the perceived ease of use and perceived usefulness of the ERP system. Enhancing the knowledge and understanding of the individuals from non-technical background can improve their trust in the new ERP system. Training can therefore help in reducing perceived security and privacy Risk.

A high degree of change can lead to higher psychological risks which can result in other risks. However, the psychological risk is mainly related to the change that occurs within the organisations, rather than being related to the perceived ease of use and perceived usefulness of ERP. Some of the perceived psychological risks which could result in affecting an individual's ability to adopt ERP are mainly related to change in role or responsibility. However, with effective training, such risks can be reduced.

Saudi culture of high uncertainty avoidance negatively affects employees' adoption of ERP. This also means that uncertainty about the efficacy of the new system reduces the perceived ease of use and perceived usefulness of ERP. Effective training can reduce perceived uncertainty in the system and boost the adoption of ERP.

Saudi culture of power distance positively affects employees' adoption of ERP. Once the decision to adopt has been taken at the topmost level, employees are likely to accept it.

The collectivist culture of Saudi Arabia can significantly influence the adoption of ERP. This risk could be associated with the changes in the status quo, changes in the position within the organisation or changes in the job role, which could lead to higher resistance. Team rotation and minimisation of job reallocation can minimise this risk. Training can involve job rotation and working with other teams to reduce this risk.

The cultural dimension of masculinity can result in affecting the perceived ease of use of the new system rather than affecting the perceived usefulness of the new system. Training can even out the knowledge thereby reducing perceived trade-offs in adopting ERP.

Training is critical for the adoption of ERP, and by adequately designing training programs, it is possible to boost ERP adoption. ERP allows individuals to complete tasks easily, quickly and more reliably. Training can be job-focused, allowing individuals to witness real benefits through the adoption of ERP. This is likely to boost the adoption of ERP among users.

Chapter 6: Discussion

6.1 Introduction

Analysis of the literature has informed that employees have various perceived risks that affect their willingness to adopt new technologies (Abdulah, 2016; Farzianpour et al., 2014; Yoon and Occeña, 2014(. These risks include financial risks, time loss risks, performance risks, psychological risks, functional risks, security and privacy risk, and social risks. In addition, several cultural dimensions affect employees' adoption of ERP. This research is consequently aimed at finding which of these perceived risks affect employees' adoption of ERP in Saudi large-scale organisations and how training can be used to alleviate employees' perception of those risks. The earlier chapter provided an analysis of the data obtained from the questionnaire survey and interviews. This chapter will focus on providing a discussion of the findings of this research and comparing those with the findings of the past research.

6.2 Main Findings

The evidence from this research has informed that perceived risk is a key problem that restricts individuals from ERP adoption. Like the adoption of new technologies which involves moving away from an established and well-versed existing system to a new system, ERP adoption may lead to resistance among employees (AlMuhayfith and Shaiti, 2020; Eid and Abbas, 2017; AlBar and Hoque, 2015; Klaus et al. 2015). This research confirms that the introduction of the new system, especially the new way of doing things leads to resistance as employees perceive several challenges in using the ERP system. The adoption of new technology is mainly attributed to change in a working environment, change in work expectations and changes in the ways of the work that were traditionally carried out (Miller, 2019; Hou et al. 2016).

Data from both surveys and interviews informed that implementation of ERP is stressful for employees, who are accustomed to using the legacy systems. These findings support the findings of past researches such as Ali and Miller (2017) and Hou et al. (2016), which suggested that perceived challenges in using the new systems lead employees to resists implementation of ERP systems.

This research primarily investigated the impact of seven kinds of perceived risks as well as the impact of cultural factors on employees' perception of adoption of ERP. These seven kinds of perceived risks are; financial risks, time loss risks, performance risks, psychological risks, functional risks, security and privacy risk as well as social risks. In the questionnaire survey, four kinds of perceived risks, namely Perceived performance risk, perceived function risk, perceived time loss risk, perceived security and privacy risks, were found to have a statistically significant impact on employees' adoption of ERP. In addition, culture was found to have a statistically significant impact on employees' adoption of ERP. According to the findings of the questionnaire survey and interviews, training can be used to mitigate these perceived risks and consequently improve the adoption of ERP.

The table below shows the comparison of the findings of the questionnaire survey and semi-structured interviews for each of the factors:

Table 27 Comparison of interview and questionnaire findings

	Questionnaire survey	**Interviews feedback**
Perceived Performance Risk	It affects the ease of use of ERP but not the perceived usefulness of ERP among Saudi users.	Perceived performance risk can negatively affect the adoption of ERP in the context of the perceived ease in using the new technology, while it has no impact over perceived usefulness of the ERP. This also means that ease of use can be improved with effective training, and therefore, performance risk can be eliminated.
Perceived Social Risk	It does not affect either perceived usefulness or ease of use of ERP among Saudi users.	The interview findings inform that participants have experienced some form of perceived social risks, such as the risk of losing reputation and the risk of losing the job role. However, quantitative findings identified no statistically significant association with perceived ease of use and perceived

		usefulness of ERP. Also, social risks are not very critical, which result in bringing no statistically significant relationship.
Perceived Functional Risk	It affects the ease of use of ERP but not the perceived usefulness of ERP among Saudi users	Perceived Functional risk can negatively affect the adoption of ERP. Findings from the interview have also informed that participants were worried about the functional failure of the system, which may create a barrier in perceived ease use of the ERP but no effect on perceived usefulness. This means that training can help in reducing perceived Functional risk by enhancing knowledge of employees towards the new system.
Perceived Time Loss Risk	It affects the ease of use of ERP but not the perceived usefulness of ERP among Saudi users	Time loss risk is found to be high for the individual who is not from a technological background. Therefore, the perceived ease of use can be affected by the limited knowledge of the users. However, it does not affect the perceived usefulness of ERP. Individuals from technology background consider that ERP helps in reducing time loss, but time loss risk can be quite high for technical people if something goes wrong. Individuals not knowing what to do can cause bottlenecks. Training can reduce perceived time loss risk, and the barrier towards achieving perceive ease of use can be prevented.

Perceived Financial Risk	It does not affect either perceived usefulness or ease of use of ERP among Saudi users	Perceived financial risk is not found to have any statistically significant relationship with the perceived ease of use or perceived usefulness of ERP. A similar finding is obtained from the interview results. There is little perceived financial risk in adopting ERP, and therefore, it does not affect employees' adoption of ERP. Training reduces the financial risk of project failure for the organisation. For employees, training does not affect perceived financial risk.
Perceived Security and Privacy Risk	It affects both perceived usefulness and perceived ease of use of ERP among Saudi users	Perceived Security and Privacy Risk can negatively affect the adoption of ERP. This is because it creates a barrier for the users in achieving the perceived ease of use and perceived usefulness of the ERP system. This also informs that enhancing the knowledge and understanding of the individuals from non-technical background can improve their trust in the new ERP system and can also improve their perceived ease of use and perceive the usefulness of ERP. Training can help in reducing perceived security and privacy Risk.

Perceived Psychological Risk	It does not affect either perceived usefulness or ease of use of ERP among Saudi users	A high degree of change can lead to higher psychological risks which can result in other risks. However, the psychological risk is mainly related to the change that occurs within the organisations, rather than being related to the perceived ease of use and perceived usefulness of ERP. Some of the perceived psychological risks which could result in affecting an individual's ability to adopt ERP are mainly related to change in role or responsibility. However, with effective training, such risks can be reduced.
The cultural dimension of Uncertainty Avoidance	It affects both perceived usefulness and ease of use of ERP	Saudi culture of high uncertainty avoidance negatively affects employees' adoption of ERP. This also means that uncertainty about the efficacy of the new system reduces the perceived ease of use and perceived usefulness of ERP. Effective training can reduce perceived uncertainty in the system and boost the adoption of ERP.

The cultural dimension of Power Distance	It affects the ease of use of ERP but not perceived usefulness of ERP	Saudi culture of power distance positively affects employees' adoption of ERP. Once the decision to adopt has been taken at the topmost level, employees are likely to accept it. Perceived ease of use can still be difficult for the employees, but the dimension of power distance and centralised decision making may communicate the perceived usefulness of the new system and may not affect the adoption of the new system completely. Training may not have a significant impact on mitigating negative impacts of power distance culture.
The cultural dimension of Collectivism	It does not affect either perceived usefulness or ease of use of ERP among Saudi users	Collectivist culture of Saudi Arabia can significantly influence the adoption of ERP as was seen under social risk. This risk could be associated with the changes in the status quo, changes in the position within the organisation or changes in the job role, which could lead to higher resistance. However, it is not associated with the perceived ease of use not it is related to perceived usefulness of the system; rather it is an individual risk factor which can be addressed through Team rotation and minimisation of job reallocation can minimise this risk. Training can involve job rotation and working with other teams to reduce this risk.

The cultural dimension of Masculinity	It affects the ease of use of ERP but not perceived usefulness of ERP	Masculine is the cultural dimension that is specifically associated with the power, position, material wealth and influence. Experienced individuals will find a significant trade-off in adopting new technology. Therefore, the dimension of masculinity can result in affecting the perceived ease of use of the new system rather than affecting the perceived usefulness of the new system. Training can even out the knowledge thereby reducing perceived trade-offs in adopting ERP.
The cultural dimension of Long-Term Orientation	It affects both perceived usefulness and ease of use of ERP among Saudi users	Long term orientation could affect the individual's perspective towards understanding and adopting the new system, which in turn results in creating the barriers for its perceived ease of use and perceived usefulness. Training can be designed to develop the core skills of individuals. This is likely to improve the adoption of ERP among users.
Training	It affects both perceived usefulness and ease of use of ERP among Saudi users	Training is critical for the adoption of ERP, and by adequately designing training programs, it is possible to boost ERP adoption.
Perceived ease of use of ERP	It affects employees' extent of ERP usage among Saudi users.	Perceived ease of use of ERP is likely to increase once people start using ERP in a monitored environment with training. This will boost their willingness to adopt ERP.

Perceived usefulness of ERP	It affects employees' extent of ERP usage among Saudi users.	ERP allows individuals to complete tasks easily, quickly and more reliably. Training can be job-focused, allowing individuals to witness real benefits through the adoption of ERP. This is likely to boost the adoption of ERP among users

The sections below discuss the findings related to each of the perceived risks, along with a discussion of the interview findings on whether training can be used to mitigate those perceived risks.

6.3 Primary Perceived Risks

6.3.1 Perceived Performance Risk

Quantitative analysis of the survey has informed that Performance risk has a statistically significant impact on the Perceived Ease of Use of the ERP system and consequently on the employees' adoption of the ERP system. This view was supported in the interviews as well; interviewees agreed that high perceived performance risk would erode employees' motivation and interest in using the ERP system. Evidence from the literature has informed that risk related to job performance is a barrier to the successful adoption of ERP (Sykes et al., 2014; Jalal, 2011). Questionnaire survey and interview respondents confirmed their view as well as that of Popovič (2017) who identified that even after the adoption of ERP, its implementation becomes difficult because of the performance-related perceived risks, as the users may perceive that their limited knowledge and skills about the new system could affect their job performance.

However, evidence from the interviews has informed that respondents have displayed trust in the reliability of the system, which can be considered as the positive indicator, under which users cannot shift the blame of poor performance on the new system. A high rating on the performance risk can also be associated with the evidence related to cultural dimensions. For example, Saudi culture is high on uncertainty avoidance, indicating that Saudi nationals are likely to be skeptical about change that disrupts the status quo. Alhirz,

(2018) in his study has further informed that national culture can have significant influence over the ERP adoption and acceptance, as the different cultural dimensions can affect a user's ability to adapt and implement ERP. A cultural dimension of uncertainty avoidance, which is high in Saudi Arabia, could be an important factor, as adopting new system causes uncertainty among employees, about its usage and how it will impact their job performance (Alhirz, 2018). People having no experience and skills of using the ERP system could perceive that the system would increase complexities and would directly impact their performance. The new system could also be worrisome for the employees, as that is completely different from the existing system.

The culture of trust and reliability within the organisation can reduce the fear of poor performance among the employees, and the acceptance of new technology becomes easier (Ekanayake, 2014). Trust and reliability of the system can help alleviate some of the perceived performance risks of employees, which, according to interviewees, is likely to boost employees' adoption of ERP.

Literature also confirms that perceived ease of using the new system can reduce the perception that new system is complex, which can only be gained through personal experience (Sunny et al., 2018). This is the reason the interview respondents from IT department stated that the ERP system is easy to use and provide good control and predictability. No statistically significant impact of performance risk was found on perceived usefulness of ERP system. Findings of the survey and interview confirm that performance risk has a negative impact on the end user's perception of ERP usage.

According to ALdayel et al. (2011), successful adoption and implementation of ERP help in improving the performance and productivity of employees. However, this research confirms that employee performance and productivity can only be improved through appropriate training and guidance and providing opportunities for development and growth. This supports the views of Badewi and Shehab (2016) that employees' personal performance significantly depends on the quality of training. Interviewees confirmed that adequate practical and job-focused training which provides individuals with sufficient experience of using the system to accomplish their tasks can be useful in alleviating perceived performance risk in adopting ERP. Interviewees also recommended that the training should be practical, and employees should get first-hand experience of using an ERP system to accomplish the tasks that they are expected to perform in their job.

6.3.2 Perceived Functional Risk

Questionnaire survey findings revealed that perceived functional risks do affect employees' perception of the ease of use of ERP systems. These findings were supported by the interviewees, who suggested that one of the key reservations that employees have towards new systems like ERP is their perceived instability and unreliability. This study confirmed findings of Chung (2007) who had espoused that 'Function' is an important factor that can increase the end user's positive perception towards ERP system. This means that researchers believe that the functionality of the system is important for successful adoption of ERP (Rajan and Baral, 2015). Quantitative survey analysis has informed that mean value for the Perceived Functional Risk is quite high which means that individuals are mainly concerned about these risks, and failure to address these may affect employees' adoption of ERP. This supports the findings of Abdinnour and Saeed (2015) who have espoused that functional risks could be a major consequence for successful adoption of ERP because lack of knowledge and understanding about functionality and benefits of the new system can restrict users from adopting it.

Findings from the literature, as well as from the survey and interview analysis, have informed that functional risk is mainly associated with the technical reliability of the system. For example, it is perceived that technical systems are likely to fail any time; thus, uncertainty regarding effective functionality of the system poses a barrier in its successful adoption (Rajan and Baral, 2015). Mean value for Functional risk was found to be high in survey analysis, which also means that the perception of the probability of a system failing completely or failing in a way that it might not perform in expected way pose a threat to the employees and give rise to perceived functional risk. Literature has also informed that ERP systems are required to provide many functional benefits to the business, such as flexibility, easy, modularity and efficiency (Ahmad et al., 2016).

Findings from the survey and interview analysis have provided similar perspective towards functional risks. Respondent of the survey and interviews confirmed that perceived functional risks, such as what would happen if the server is lost or application is crashed, have a significant bearing on employees' adoption of ERP. Some respondents cited their own experiences when they have been uncertain if their information would be saved in such a scenario or not. These findings could be understood from the perspective of knowledge and understanding of the system. Therefore, this research further confirms that functionality issue is about uncertainty towards the new system, and also displays the

lack of knowledge and understanding about the system, which occurs because of lack of training. This research also confirms the findings of the literature, which informs that uncertainty regarding productivity and performance of the system, give rise to perceive functionality risk (AlBar and Hoque 2015).

The main problem with the existing system in organisations is that training programs are not adequate. As reported by interview respondents, training programmes in large organisations are often generic and lack individual focus that results in increasing perceived functional risk.

Chadhar and Daneshgar (2018) have espoused in their study that lack of knowledge gives rise to misconceptions which eventually affect user adoption. Therefore, training programmes targeted toward enhancing the technological proficiency of employees would also improve their knowledge and reduce the perception of functional risk. Providing adequate training is also important for enhancing employee motivation towards adopting ERP and will also make them more confidence in using ERP. Through literature and qualitative and quantitative analysis of data, it is found that reliability of the system is important for users, thus training improves their confidence and their trust on reliability of the new system, which eases the process of adoption. In this respect, training should focus not only in getting people used to the system but also focus on helping them understand how to improve the reliability of the system — for example, saving the information from time to time so that in case of a system crash, the last saved version has most of the information. Many times, systems crash not because the system is unstable but because of errors made by users. Teaching employees of how to adequately use the system will, therefore, also help them in improving the reliability of the system. Also, training programs can include information on how to troubleshoot if something goes wrong and what actions to take in different unexpected and unwanted scenarios such as when the system crashes. This will give employees in confidently managing even scenarios arising out of perceived functional risks which will help the organisation in weakening the link between perceived functional risks and employees' adoption of ERP. Often the users are more worried about the outcomes of the risk than the risk itself and in case of perceived functional risks it may be useful to train the employees about likely possible outcomes in case of occurrence of functional risks and this may be quite useful in alleviating their reservations in adopting the ERP system.

6.3.3 Time Loss Risk

Quantitative analysis of the survey has informed that Time Loss risk has a statistically significant impact on the Perceived Ease of Use of the ERP system and consequently on the employees' adoption of the ERP system. Literature has informed that risk of time loss could be a significant barrier in Saudi Arabia for the adoption of new technology (Khushman et al., 2009), and if employees are not effectively trained to adopt ERP, the level of time loss risk could increase. Littler and Melanthiou (2006) informed that risk of time loss is perceived as users may be concerned regarding completing their jobs timely by using ERP if they do not have complete understanding and training on the new process. AlBar and Hoque (2015) informed that ERP system could be complex and may also demand special technological skills from the users, which may affect user's perception towards loss of time and successful adoption of technology. Five interviewees agreed, and six were unsure that time loss risk would affect employees' adoption of ERP.

Interviewees, especially from technology backgrounds, strongly argued that ERP does not increase time loss risk but rather reduces it as all transactions are processed in real-time. However, some interviewees from non-technology backgrounds argued that if the employees do not know how to use ERP, then their perceived time loss risk is likely to increase. Some of the interview respondents have also informed that people have little knowledge about new technology and do not know how the system should be used, which can result in delaying the transactions and affecting business. Literature also provides two different perceptions of time loss. Firstly, time loss can be prevented by using ERP, as it would hasten the process of information transfer and other transactions (Azmi et al., 2010; Humayoun and Khan, 2010). However, if the process does not work as planned, it could result in time loss (Abdulla, 2016; Sajjad et al. 2010).

Some of the respondents of interviews have also informed that transfer of information is an important part of business activities, if the person with information, do not know how to put it in ERP system, other employees seeking such information would be affected resulting in time loss. In other words, individuals with poor ERP usage skills may cause bottlenecks in the system.

Interview respondents clearly stated that the lack of knowledge among the employees is a major contributor to perceived time loss risk. Furthermore, they agreed that with sufficient training, the employees would become well versed with the ERP system just

like they were with the old system, and this may eventually reduce perceived time loss risk among employees.

Through the effective training programme, employees can know about the benefits of the system, learn to work on the system and make effective use of it, so as to reduce time loss that could occur if the user is unable to use the system in a proper manner (Abdulah, 2016).

6.3.4 Perceived Security and Privacy Risk

Quantitative analysis of the survey has informed that perceived security and privacy risk has a statistically significant impact on the Perceived Ease of Use as well as perceived usefulness of the ERP system and consequently on the employees' adoption of the ERP system. Interviewees from non-technological backgrounds agreed that users could be concerned about the protection of information stored in ERP systems while interviewees from technological backgrounds seemed to have little concern about security and privacy in ERP as they considered it a quite secure system. Some individuals argued that security and privacy matters are not of concern of the employees but rather than of the organisation. Nevertheless, the interviewees agreed that training individuals on maintaining security and privacy in ERP could be a very useful strategy for Saudi employees of ERP as this will give them more confidence and address their security concerns.

This research confirms the findings of past research that security and privacy risks are perceived to be quite significant in the case of ERP systems (Azmi and Kamarulzaman, 2010; Matende and Ogao, 2013). Usman and Shah, (2013) confirmed that the risk of security and privacy occurs, where the users believe that their personal information can be compromised and used in such manner, which could harm their reputation. Rajan and Baral (2015) have also confirmed that concerns towards security and confidentiality of critical information can restrict users from adopting ERP. Findings from the survey have informed that there is a statistically significant impact of security and privacy risk on perceived usefulness of ERP system. Thus, this research confirms that security, privacy and confidentiality of information could be an important factor, which users may expect from the technological system, but also have doubt if the system could provide security and privacy.

Respondents displayed some issues associated with personal login information and while logging remotely, and it could be a concern in ERP adoption. Although, the findings from the survey and interview analysis have informed that to some extent security and privacy risks have been addressed in ERP systems, but this study also confirms that such risks may still impact end user's adoption of ERP.

However, the risk level can be reduced through training and education. Providing the training regarding the system's security and privacy aspects can enhance employee confidence and trust in ERP system and can remove the barrier or security and privacy risk completely (Upadhyay et al. 2011). This view was confirmed by interviewees, who agreed that technical training on maintaining security and privacy in ERP could be quite useful to address this concern of the employees.

6.3.5 Cultural factors

As per the questionnaire survey findings, cultural factors were found to have a significant impact on employees' adoption of ERP in Saudi Arabia. Klaus and Blanton (2010) have informed that personal values and belief that are formed by national culture influence the perception of users towards usefulness and adoption of ERP. Vayyavur (2015) had also confirmed that misunderstanding or misconception regarding the benefits of the new system could result in increasing the perceived risks. The adoption of new technology is mainly attributed to a change in the working environment, change in work expectations and changes in the ways of the work that were traditionally carried out. Thus, employees may resist the adoption of new technology.

Many perceived risks could be associated with uncertainty about the new system that results in causing stress and struggle for the employees as they are required to learn a completely new system of work. The findings from the survey have also informed that respondents have been concerned about the uncertainty that is involved with the adoption of ERP. Studies have also supported this view that one of the major issues about technology or change resistance is the uncertainty about the new technology and how it would impact employees (Jabri and Roztocki, 2015). Saudi Arabian culture is ranked high on uncertainty avoidance. Perceived uncertainty can be caused by the lack of knowledge, skills and understanding among employees towards the ERP system. For example, a study conducted by Rajan and Baral (2015) reported that lack of information regarding the new

system could result in increasing perceived uncertainty towards the uses and benefits of ERP. It also means that failure to understand the intended benefits of the new systems can cause the perception of some risks (Alhirz and Sajeev, 2015). Consequently, the interviewees suggested that extensive training can help the users become familiar with ERP systems which are likely to boost their adoption of ERP as was highlighted by the questionnaire survey findings.

Saudi Arabian culture is also ranked high on masculinity, which means that competitiveness, material wealth and success are highly valued in Saudi society. One of the issues with ERP is comparative technological incompetence of people with higher experience. More experienced employees tend to display a higher degree of resistance towards technology acceptance because it could be difficult for them to unlearn a lot of work practices that they have continued for many years.

Technological adoption brings varied forms of changes within an organisation, such as the changes in the job requirements, changes in the status and position of employees and also changes in the mode of work practice. Therefore, such changes to be accepted and implemented positively require preparing employees for transition (Popovič, 2017). Employees may have a fear of losing the job, increasing uncertainty, loss of power and position and fear of altering professional relationships within the organisation (Ahmad et al, 2015). In Saudi Arabia's collectivist culture, such risks may affect individuals at both personal and team levels leading to higher resistance. Individuals in Saudi Arabia tend to resist change in favour of status quo, and the two ways to reduce this resistance is to minimise this resistance is reduced uncertainty in the post-change environment and to adopt a minimum disruption approach to implementing change. Interviewees commented that training is quite useful in minimising perceived uncertainty in post ERP environment but for that training should be job focused for every employee. Interviewees also recommended that individuals should have role clarity so they can be prepared according to their future roles in a post ERP environment.

Under the cultural dimension of long-term orientation, it is found that survey respondents provided higher responses indicating that current training programmes are not based on long term orientation. Also, with rapid technology change, providing training with particular technology would not be sufficient, and thus, organisations are required to

focus on enhancing the technological proficiency of individuals rather than training them in a particular technology.

6.4 Insignificant Perceived Risks

6.4.1 Perceived Financial Risks

Questionnaire survey findings revealed that perceived financial risks do not affect employees' perception of the ease of use of ERP systems or employees perceived usefulness of the ERP system. Consequently, perceived financial risks were found not significant in affecting employees' adoption of ERP. These findings somewhat contradict the findings of authors who found that financial risk is an important perceived risk that may affect user's ability to adopt ERP system effectively (Azmi and Kamarulzaman, 2010; Matende, and Ogao, 2013). Having a perception regarding the failure of the system could increase the perceived financial risks (Polatoglu and Ekin, 2001). Johansson and Ruivo, (2013) also reported that concern towards the failure of the system and the financial loss that it would cost is not considered as worth the financial price paid for adopting and implementing an ERP system. However, the findings of the survey and interview have shown that financial risk is not perceived as a major risk in adopting ERP. Results of the survey informed that financial risk has no impact on the perceived usefulness of ERP. One of the reasons for the difference in findings can be the different samples used. From the perspective of the management perceived financial risks for the organisation are high in case of ERP as the failure of ERP projects can cause significant losses to the organisations and even the management of their personal financial interests are linked with that of the success of the project. However, for employees, the perceived financial risks may not be significant as the failure of ERP projects may not affect them personally. This means that the authors who spoke about perceived financial risks being significant in case of ERP were referring to the perceived financial risks for the organisation while the current study referred to perceived financial risk for the employee.

Financial risk received the lowest rating in the survey, which indicated that employees do not perceive it as a risk factor. This could be mainly because the ERP systems are meant to reduce and prevent errors, and even if the mistakes are made by the users, it would rarely lead to any financial loss for the employees. Most of the interview respondents have also disagreed to perceived financial risk in adopting ERP. For example, respondent

12 reported that there is no financial risk, nor they have heard about any financial loss occurring while using ERP.

Financial risks were not found to have any statistically significant impact on the perceived usefulness of the ERP system. It may be because ERP systems are quite sophisticated software, which has the potential to trace and prevent errors that could lead to financial loss. Interview Respondents had no significant view of financial risks. Interviewees suggested that ERP systems can quickly and easily flag the errors, even if the users have wrongly inserted some information and hence financial repercussions are very rare, until or unless such action has been taken knowingly or as fraudulent acts.

6.4.2 Perceived Psychological Risk

In the questionnaire survey, the perceived psychological risk was found to have no statistically significant impact on both perceived usefulness and perceived ease of use of the ERP system. Consequently, perceived psychological risk in adopting ERP is not a statistically significant predictor of employees' adoption of ERP. Studies have identified that perception of risk is mostly psychological and can result in influencing many intrinsic and extrinsic factors, which may not be under an individual's control (Hsi-Peng et al., 2005). According to Chadhar and Daneshgar (2018), Psychological anxieties may be associated with inability and lack of knowledge of the users in using and implementing the ERP system.

Evidence from the literature has informed that psychological risks could impact the end user's ability to accept and implement the system effectively. Psychological risks may include a negative perception of the users towards the system (Dezdar and Ainin, 2011). Lack of training of employees has been found as the major problem that increases negative perception and perceived psychological risk (Dezdar and Ainin, 2011). Peng and Nunes (2010) suggested that the perceived risk of losing the job can also increase psychological anxiety and stress among employees. Change is the most fundamental factor that comes with technological adoption within the organisation. Adoption of technology may change the work practices and thus, give rise to problems of user resistance due to perceived psychological risk (Bhattacharya and FossoWamba, 2015; Popovič, 2017). Chadhar and Daneshgar (2018) espoused that lack of management's ability to develop short term strategies for managing transition could also increase

perceived psychological risk among employees. However, the findings from the survey have indicated that users do not perceive any psychological risk in adopting ERP, nor they have any form of stress or anxiety towards using the ERP system.

This can be, therefore, associated with the cultural dimension of collectivism, under which users perceive support from the colleagues and team members, which result in reducing psychological risks towards ERP adoption. Interview respondents have informed that psychological risks can occur because of the change and transition that the new system can induce. However, respondents also stated that stress and anxiety causing the psychological risks would happen whenever there is a change, so it is not only related to the ERP system but any form of change. According to Upadhyay et al. (2011) identified that training of employees could help in effective transition during change. While questionnaire survey found perceived psychological risks to be an insignificant predictor of employees' adoption of ERP but interviewees suggested that any perceived stress or anxiety in adopting new technologies such as ERP could affect other perceived risks such as perceived performance risks. Consequently, they also suggested adequate and sufficient training will help alleviate perceived psychological risks as individuals will become confident of using the ERP system.

Interview findings, as well as survey findings, have informed that uncertainty regarding the outcomes could also increase psychological risks and thus some degree of such risks is involved in ERP adoption, which can be prevented through training. Thus, this research confirms that psychological risk does not have any significant impact on employee adoption of ERP. However, preparing and training the users for change and the transition could reduce the perceived psychological risk if it is present intrinsically.

This study also confirms that when training programmes are implemented, they not only improve the professional knowledge and skills of individuals but also improve their confidence in their own skills and abilities. Such confidence helps users to overcome perceived psychological risks and to focus on improving personal performance and productivity.

6.4.3 Perceived Social Risks

Social risks are also found to be associated with social group influence (Hou et al. 2016), and consequently, it was expected that social risks would have a significant bearing on employees' adoption of ERP. Interestingly, despite the collectivist culture of Saudi Arabia, questionnaire survey findings indicate that perceived social risks have no statistically significant impact on the employees' adoption of ERP. Interviewees, however, agreed that there are some social risks which may affect the adoption of ERP. Two such social risks that interviewees spoke about were the risk to the reputation of the employee is they made mistakes in using ERP and the risks of being detached from the previous social group at the workplace due to change in the job description in post ERP structure of the organisation.

Hou et al. (2016) also informed that employees might perceive that the adoption of the new system would impact their reputation and position, and they would lose their job control. Social risks can also be associated with the risk of losing job and position in the organisation as well as losing social connections.

From another social perspective, Saudi Arabia is a collectivist society and individuals from their professional and social networks in their colleagues and at their workplace. Change, transition and restructuring of the organisation for ERP adoption can affect their social abilities, due to which ERP adoption could be resisted (Vayyavur, 2015). Interviewees supported this view, especially the HR managers, who stated that being moved to other teams/ department is a very common concern of employees in case of implementation of ERP. However, findings of the survey informed that perceived social risk have no statistically significant impact on employee ERP adoption. It could be that while employees have perceived social risks, these risks may not be too intense so as to cause an individual's disinterest in the ERP system. It is also possible that individuals take such changes or granted in cases of significant organisational changes.

Findings from the survey and interview analysis have also informed that training is necessary to reduce social risk perception of users and to enhance their confidence by promoting their skills and abilities. This research confirms the findings of Ngai et al. (2008) that training opportunities will enhance the confidence of employees and lead to the lowering of some social risks. Training in different teams can alleviate the fears of being allocated to a new team as individuals can gain confidence in working in new teams

as well as form new relationships. This not only improved cohesiveness but also allow employees to exchange their knowledge and information with wider organisational resources. With extensive training, employees can learn the new system, and this will alleviate their perceived social risk of being embarrassed. Highlighting that making errors is quite common at the beginning of the adoption of ERP can further boost employee confidence as they may consider such errors as part of their natural learning process rather than as a matter of shame. Some users may need more support than others, and organisations must try their best to consider the training needs of at an individual level rather than at team level.

6.5 Chapter Summary

Perceived risks could be associated with the different forms of risks and fears that employees can perceive ERP implementation. Studies have also indicated the perceived risks could be psychological, performance-related, or the risk of losing power and position. Therefore, the perception of risks can also determine the ways in which the individual adopt or reject particular technology. Studies have identified that perceived risks can arise on personal, professional or societal levels, and therefore, it becomes very significant to explore and understand the different patterns of risk. This chapter includes the discussion of findings from the literature review, interviews and questionnaire survey. Findings of the study have informed that the lack of surety about the outcomes of ERP implementation also increases the stress among the employees. Another important aspect associated with the risks in technology adoption that has been identified through the interview of respondents is that resistance of change and adoption of new technology occurs because it is difficult to unlearn old things than learning new things.

Analysis of different findings has also indicated that negative consequences that can arise because of change also increase the level of perceived risks. Employees may also fear that adoption of new technology may result in increasing ambiguity regarding the operations of the organisation. However, findings of this research confirm that perception of the risks can differ from person to person. For example, for some individuals, the risk of losing power and control could be higher, while for other the uncertainty about their job role could be the most significant risk, while for another inability to use the new technology appropriately could be the most significant risk.

Therefore, training has an important place in reducing various perceived risks and enhancing ERP adoption among employees. One of the most significant findings of this research is that benefit of training would not only be associated with improving employee perception towards technology acceptance but would also systematically reduce their negative perception of different risks. Considering, understanding and working towards various human factors, is significant for successful ERP implementation. Therefore, this research is very significant in informing about the various perceived risks and impact of training in altering user perception towards perceived risks. This research confirms that the level or prevalence of risks factors may vary; however, successful adoption and implementation of ERP is dependent on effective training, supervision, guidance and organisational leadership.

Chapter 7: Conclusion

7.1 Chapter introduction

This chapter will provide the conclusion of this research, with summary of the research and with the information about the key findings of this research. This chapter will provide the conclusion that this research has achieved in terms of identifying the perceived risks in ERP adoption. Perceived risks are the risks that may affect the end users' attitude and perception towards the new technology and how the adoption of new technology can result in creating risks factors. This conclusion also informs about the different cultural factor that influence the ERP adoption and risk perception of end users in Saudi Arabia.

This research will help in understanding the significance of organisational training in reducing the individual risk perception of the end users towards ERP adoption. This chapter will provide the summary of the research followed by the key findings. The main findings of this research will help in providing a new perspective towards the end user perception towards new technology adoption and how cultural factors could be significant in influencing risk perception. This chapter will also inform about the key contribution that this research made in the existing literature as well as provides an overview of recommendations and limitations.

7.2 Summary of research

This research is based on investigating the impact of ERP training on the end user's perception of risks associated with ERP adoption and implementation in Saudi Arabia. Evidence has shown that ERP projects are considered to be the high-risk projects and its implementation in the organisations could be very complex. This research identifies that there are many problems and complexities that may restrict the effective adoption of ERP and may also restrict organisations to achieve success through technology adoption. Scholars have been conducting various researches for identifying the critical success factors that could result in successful implementation of ERP in organisations.

This research firstly explored the concept of perceived risks. Perceived risks are associated with the perception of risks that may occur at the individual level and can result in influencing the user perception and attitude. This research identifies that despite of various barriers that could affect the successful implementation of the ERP, however, this

research specifically focused on analysing the impact of the different forms of perceived risks. This research includes the theoretical overview that discusses the theory of reasoned actions, theory of planned behaviour and technology acceptance model. These theories provide various theoretical elements, such as the perception and behaviour of the end users towards the new technology.

This study conducted a comprehensive review of literature and identified various themes associated with types of perceived risks originated through subjective experience and organisational barriers. This research also provides a link between cultural factors and perceived risks in ERP adoption and how culture could be a significant factor in influencing user perception and attitude, and in creating barriers in successful ERP adoption in Saudi Arabia. This research conducted the interviews and questionnaire survey to present the findings for evaluating the impact and importance of training program for reducing perception of risks and successful adoption and implementation of ERP in organisation.

This research is conducted systematically by applying appropriate mixed method approach for developing the findings from triangulation of findings and analysis. This research indicates the significance of training programmes, which are important management approaches for aligning employee goals to organisational goals. Training, supervision, and organisational support and leadership are identified to be important factors in reducing end user's risk perception towards ERP adoption. Therefore, this research also makes a significant contribution towards highlighting the importance of training not just for improving employee skills, but also to reduce their risk perception towards new technology adoption.

7.2.1 Findings

Analysis of the literature has informed that willingness of the employees to adopt ERP can be influenced by various perceived risks. Some of the most significant perceived risks that end users can perceive are the Financial risks, time loss risks, performance risks, psychological risks, functional risks, security and privacy risk, and social risks. Evidences from the literature have been analysed and aforementioned risks have been identified from those evidences. Also, this research identified the impact of various cultural dimensions that influence the perception and behaviour of the end users towards

technology adoption. However, this research specifically focuses on analysing that what are the main perceived risks (out of aforementioned list) that affect the end user perception about ERP adoption in Saudi Arabia.

The key findings of this study indicate that financial risks are not significant for the end users in Saudi Arabia in terms of influencing their risk perception, which contradicts with the findings of the earlier studies. This is mainly because of the difference in samples, as earlier studies collected evidences from management, who may have perceived financial risk because of organisations' performance, could be impacted by failure of ERP. However, as this study focused on end users, it concludes that financial risk may not be significant for them. Financial risk also received the lowest rating in the survey results, indicating that end users believe that ERP failure would rarely lead to financial risk for them personally.

Another significant finding of this research is regarding the perceived time loss risk. This finding of this study concludes that in the absence of proper training for the end users, the level of perceived time loss risk can significantly increase. Interview respondents from the technological background do not found time loss risk to be significant, while the individuals from non-technological background that ERP adoption can result in time loss. Therefore, this research concludes the lack of knowledge, awareness and training before adoption of new system can result in increasing the perceived risk levels for end users.

Another key finding of this research is that perceived performance risk has the statistically significant impact on the perceived ease of use of ERP system, which means that it can impact the end users' perception and may restrict them to adopt new technology. Findings from the literature also confirmed that performance risks can pose a barrier for individuals to adopt new technology. This research also concludes that performance risk could affect ERP implementation even after the adoption in organisation. This is mainly because of the lack of skills, knowledge and awareness about the new system that restrict in implementing successfully.

This study also explores the psychological risks, but found no statistically significant impact on perceived usefulness and perceived Ease of using ERP. Evidences from the literature have informed that psychological anxieties could be mainly associated with lack of knowledge and lack of training can result in increasing negative perception towards efficacy of new technology. However, this study concludes that end users do not have

high level of perceived psychological risk, which means they do not experience psychological stress or anxiety to very high levels that could impact their ERP adoption. However, interview results indicated impact of psychological stress to some levels. This is associated with the importance of collectivist culture that helps individuals to seek collaborative support from co-workers and reduce chances of psychological risk.

Another key finding of this research informed that perceived functional risks is an important risk that organisations might want to address for successful ERP implementation. Survey results informed that functional risk is very high which means it can affect users' perception towards ERP adoption. Uncertainty towards the new system is the main reason behind functional risk and such uncertainty occur because of lack of training. Security and privacy risk mainly influence the perception of the individual who lack knowledge about the new system or lack skills to use new system effectively. The key finding of this research indicated that technological knowledge reduces the security and privacy risk. Therefore, providing training opportunities to end users can help in eliminating this perceived risk.

Another key finding of this study informed that risk of reputation being affected and being separated from the social group. This study concludes that although the social risk is not very high, it can influence the perception of the end users to some extent. Therefore, implementing a strategic ERP training program can help individuals to overcome this barrier and would promote better ERP adoption. The findings of this study also inform that, Saudi Arabian users are significantly influenced by their cultural dimensions, such as uncertainty avoidance, increases the resistance towards technology acceptance. Power distance can result in affecting the effective communication between management and end users and therefore, impact the ERP adoption.

7.3 Achievement of objectives

This research was based on three objectives that are as follows:

1) ***To investigate if employees' perceived risks in using ERP affects their adoption of ERP.***

For achieving this objective, this research conducted a comprehensive literature review. This study concludes that perceived risks can be understood as the perception of the risks. Identifying and evaluating the perception of risk could be very difficult as the perception of an individual is mainly related to the subjective opinion of the individuals. Perceived risks can also be associated with the subjective feeling of the individuals about the uncertainty or the consequences of a new technology and unfavourable conditions that could occur if the new technology is unsuccessful. The concept of perceived risks in adoption of ERP is significantly associated with the perception and feeling of the non-technology users and that how a new technology can give rise to various risks that could impact an individual's position, job and job responsibilities.

Therefore, this research identified that perceived risks can also impact an individual's or the end user's willingness to adopt new technology. Perceived risks are also found to have a significant influence over the end user's intention to adopt new technology. This study identified that range of factors that can influence end users' perception of risk in ERP. The two important concepts have been identified in this research, first inform that individual perception is influenced by culture and second, is that risk perception among end users is also influenced by their culture. Perception of risk or the perceived risks can restrict the end users for adopting new technology because of the various ambiguities associated with it.

Literature revealed several different kinds of perceived risks that may influence end users' perception of the ERP system and consequently their willingness to adopt it in their day to day tasks. These perceived risks included: Perceived Functional Risk, Perceived Performance Risks, Perceived Social Risk, Perceived Psychological risks, Perceived Time loss Risk, Perceived Financial Risk, and Perceived Security risk. These perceived risks may have different kinds of impacts on user behaviour; for example, perceived time loss risks may lead the users to try and complete most time sensitive tasks using old technology while less time sensitive tasks may be completed using ERP.

This study has found that various forms of perceived risks can affect the end user perception. For example, end user may hold a negative view towards the efficacy of the new Technology and may perceive it be functional risk for their job performance. Therefore, in such manner perceived risks can result in affecting successful ERP adoption. Comprehensive literature review, Interviews and survey conducted for this research have also helped in achieving this objective. The different source from which data has been collected have informed about various aspects of how perceived risk affect end users. For example, evidences from the literature informed that social risks associated with personal ego can also result in causing technology resistance or may restrict end users from adopting ERP. However, the empirical data in this research found that four of the seven perceived risks identified in the literature were found to be effective in influencing end users' perception of ERP and consequently their adoption of ERP. These four risks are: Perceived Functional Risk, Perceived Performance Risks, Perceived Time loss Risk, and Perceived Security risk. Whilst the interviewees suggested that other perceived risks may also influence end users' adoption of ERP but there was not sufficient statistical support for including other three perceived risks. Some of these findings were contradictory to the findings of past researches. For example, findings from the survey have informed that despite the collectivist culture of Saudi Arabia, social risks were found to have no statistically significant impact over end users' ERP adoption.

This research finds that Perceived risks influence the end users in negative manner and develop the feeling of fear and psychological anxieties that result in end user's resistance towards new technology. The perception of the risks is mostly psychological and subjective, and that perception of the risks can be shaped by various individuals' factors. This research also finds that culture is a significant aspect that shapes Saudi end users' perception of ERP. There are various cultural factors in Saudi Arabia that influence the perception of end users. For example, due to high level of masculinity and the collectivist culture, individuals may fear the loss of their power and position thus, affecting masculinity factor, while ERP bringing changes in positions and departments can result in affecting their collectivist cultural approach. One of the key aspects that need to be noted is that perceived risks may rise with uncertainty and Saudi culture is ranked high on uncertainty avoidance in the Hofstede's cultural index. Consequently, the uncertainty associated with several aspects of ERP especially at the beginning may be one of the main cultural factors driving end users' resistance to adopt ERP.

2) ***To evaluate the impact of training on employees' perception of risk in ERP.***

All the findings of the study indicated towards the importance of training and skill development of end users. ERP system training will prepare the end users to adopt new system with complete knowledge. Preparing the individuals for change is important. Therefore, training program will prepare the end users, by providing them with knowledge and awareness related to ERP.

Impact of training on the end users' perception of risk in ERP is has been somewhat touched upon in the existing literature. Studies have stated that training is the critical success factor in successful ERP adoption. Also, organisational support and effective leadership can also be considered as significant for successful ERP adoption. However, this research was considered useful because it aimed to verify this claim using empirical evidence from Saudi large-scale organisations. Empirical data for tis was collected using interviews and questionnaire survey. This research included the qualitative interview analysis, in which participants informed about the importance of training as an important aspect of successfully implementing and adopting ERP in an organisation. Quantitative findings of the survey have also informed that training and organisational support positively affects the user perception towards the usefulness of ERP.

The qualitative interviews indicated that training helps in reducing perceived uncertainty in adopting ERP and consequently may boost adaption of ERP. This research finds that training support that is provided by organisations, can help end users in overcoming several perceptual barriers. These perceptual barriers are self-conceived and adequate training can help users in reducing perceived level of these risks in adoption of ERP. Training will also help in reducing uncertainty towards impact of ERP and will help in improving knowledge of end users towards importance of new technology. This research finds that training may not only boost adoption of ERP but also may make them more productive as they can do more and better work by reducing the perceived risk of failure.

3) ***To identify the attributes of ERP training that can make ERP training more effective in improving employees' adoption of ERP.***

Synthesis of the findings from the literature review and the qualitative and quantitative approaches has helped in achieving this objective. This study identifies that recognising the most effective training strategy is very important for reducing resistance and motivating end users to adopt and implement ERP successfully. Evidences from the literature have informed that ERP system training could be the most effective training strategy that would help in reducing the psychological anxieties among the end users and will motivate them to participate in new technology acceptance and adoption. One of the key findings of this research is that rather than generic training, as is provided in most cases, organisations should look at developing more contextualised and job focused training programs. This would require involvement of business managers with ERP implementation team to identify the training needs at micro level rather than expecting the end users to pick and learn from the generic training program. Whilst such an approach may seem costly in the beginning but is expected to provide good returns on investment in ERP system in the long run.

Training that helps in improving the operational and management skills of the employees, is also found to be an important strategy for preparing employees. Findings from the survey and interview inform that ERP system-based training strategy could be beneficial for Saudi Arabian users in order to change their negative perception towards technology acceptance. This objective was also achieved by understanding and integrating the significance of organisational leadership, support and guidance according to which ERP can be successfully implemented.

7.4 Key contributions

Contribution to the literature: Identifying the barriers to ERP adoption solves only part of the problem, the actual benefit of such research will be to focus on developing employee capabilities through training in order to ensure better readiness and willingness to adopt ERP (Hou et al. 2016; Son et al. 2012). This research takes a key step in this direction in that it talks about addressing these barriers i.e. identifying ways to overcoming the barriers that affect adoption of ERP. In this respect this research attempts

to raise a point that having done significant amount of work on identifying drivers and barriers it is time that we talk about boosting the drivers and overcoming the barriers that affect adoption of ERP. This is critical because past research indicates that despite over two decades of work on ERP, the rate of failure of ERP remains worryingly high.

This is a novel research because it talks about perceived risks rather than risks in adoption of ERP. This research identifies that the success of ERP lies in the extent to which the end users adopt it (Hou et al. 2016; Matende and Ogao 2013; Pan, Nunes and Peng, 2011; Al-Turki, 2011; Pan et al. 2011; Kronbichler et al. 2010; Lee, 2010). In this regard this research aims to tackle one of the key issues that affect success of ERP projects. By clearly separating risks from perceived risks this research draws attention towards an issue that may have been significantly ignored by past research under the impression that risks are same as perceived risks. Risk is about uncertainty and this uncertainty casts doubts, reservations and even fear in human mind which in turn may affect their response to the perceived source of risk (Abdullah, 2016). ERP as a technical area has been widely researched, however, lack of attention paid to some critical areas such as execution and human aspects have continued to lead to high rate of failure of ERP projects (Chofreh et al., 2018; Pecherskaya et al., 2018). Findings from this research may also be useful for other researchers looking at implementation of other technology-based projects. Perceived risks have been ignored by past researchers with only few researchers agreeing that perceived risks are different than risks and must be addressed as a separate research area (Abdullah, 2016). This research strengthens this argument and uses this concept empirically, probably for the first time, in research on ERP implementation.

End users' perceived risks may affect end users' willingness to use ERP systems and consequently success of such projects (Hou et al. 2016). Failure of these projects not only cause loss of millions in terms of failed project costs but also millions in possible efficiency benefits that the firms have earned by successfully implementing ERP projects. Furthermore, the success or failure of ERP projects in one organisation may also set precedent for other organisations who may be considering implementing ERP projects. This research thus, makes significant practical contribution. This research is very useful for managers'/ decision makers because it might help them in successfully executing their decision of implementing ERP.

Both theory and the empirical findings of this research, significantly contribute towards understanding the interplay between the need of implementing new technology (ERP) at workplace and the perception of risks of end users in adopting ERP. Past research has explored both the role of perceived risk as well as the role of training in context of ERP (see for example, Abukhader, 2015; Alaqeel et al, 2017; Alsomali, 2016; Almajali, Masa'deh, and Tarhini 2016; Dorobat and Nastase, 2012; Ekanayake, 2014). However, this research enriches the existing literature in many ways. This research connects both the problem and the solution; the problem being the perceived risks affecting adoption of ERP and solution being adequate training. Almajali et al. (2016) notes that the past research has not empirically tested this relationship even though some researchers argued that there seems to be a strong causal link between the two (Vayyavur, 2015). In addition, this research goes beyond existing studies in the sense that it not only talks about benefits of training but furthermore, it discusses the kind of training that is most effective in improving adoption of ERP. This improved adoption is likely to improve chances of success of ERP implementation projects. A vast amount of research has been conducted to study factors that affect adoption of ERP. This research makes a value contribution to their existing body of literature in that it draws attention towards training as a tool to resolve some of the issues that affect employee's adoption of ERP.

This research also talks about the role in shaping people's perception of risk in adoption of ERP and therefore, stresses on the significance of contextualisation of training programs. Such contextualisation has been mostly ignored in past research and consequently the most popular training model is that of standardised one size fits all model. However, this research draws attention towards the human aspect of technological adoption and why the degree of contextualisation may be essential in order to maximise the utilisation of training programs.

Practical contributions: This study aimed towards investigating the impact of ERP training on the end users' perception of risk in ERP adoption. Therefore, the first practical contribution of this research is in the area of providing the detailed insight to the problem of perceived risks, how perceived risks occur, what are some common forms of risks that are perceived and what is the influence of different perceived risks on individual's intention to adopt ERP. Implementation of ERP could only be successful, if the end users adopt it and implement it in their practice to improve work efficacy. Therefore, using the

case of Saudi Arabia have contributed towards understanding the ways through which organisations can improve their ERP adoption and success rate.

Another practical contribution of the study is the framework that it applied in analysing the process of ERP adoption by end users. The comprehensive conceptual framework that this study has developed provides a significant link between the perceived risks and rate of ERP adoption. Therefore, the contribution of this study is to understand the use of theoretical assumptions for analysing that how ERP can be institutionalised by reducing perceived risks through ERP training. Therefore, the framework that this study has developed can be used as the practical tool for improving the ERP adoption among end users and reducing the perceived barriers by enhancing training strategy.

7.5 Recommendations

ERP system adoption and implementation within organisations would result in bringing a completely new technological infrastructure. Other most significant aspects of ERP implementation are that it would result in breaking the hierarchical structure of the organisation and would result in recreating it along the lines of the newly established system or business process. ERP system would also cross the traditional departmental boundaries and would also create new processes. For making the ERP implementation successful in context of reducing the perceived risks barriers of end users, this research provides following recommendations:

- This study includes the interview response of individuals from four different industries (manufacturing, hospitality, petrochemical and retail). However, a similar study based on the similar subject can also be conducted in the service industry for enhancing the findings from different industries.
- Managers in Saudi Arabia must place focus on understanding the consequences of high cultural factors that may result in affecting end users' perception of risk in ERP. This also means that managers are required to improve the risk taking and prepare individuals for working on new process.
- Some main barriers that increased perceived risks towards ERP adoption were the lack of knowledge, lack of organisational support, lack of proper ERP system training, or lack of appropriate training to understand and accept the new system. Therefore, there is a need of focusing on developing the training programs that

could support the end users in understanding the significance of new systems and how new systems will improve their job performance rather than deteriorating it.

- Management can also take the knowledge and understanding from this research study in order to develop informed and evidence-based knowledge related to technology implementation in Saudi Arabian organisations. In this respect, managers should take cultural aspects and employee behaviour into consideration while planning for implementation of ERP.
- Last significant recommendation is that before implementing ERP in organisations, management must focus on preparing the end users for change, undertake different activities of change engagement and must address all the fears and anxieties that end users might have towards the new technology.

7.6 Limitations and future research

There were some limitations encountered during the study. These are discussed below;

1) ***Generalisability due to culture;*** The first limitation of this study is that findings of the study are unique and specifically presented in context of Saudi Arabia, which means that findings and its implications are not entirely transferable to other developed nations, specifically Western nations with different cultural perspective.
2) ***Close-ended questionnaires;*** Second limitation of the study is that it conducted the closed-ended questionnaires that lacked direct involvement of researcher. This also means that responses of survey participant may be affected, if the participant could not understand the question, or if the participant may want to conceal the truth. The closed ended questionnaires also have other limitations, such as limited suggestion of ideas, which participants may not have, but due to limitation on selecting any one response, they might have to select any one of the responses, which means that respondents with no knowledge and opinion would answer randomly that may result in affecting the findings. Respondents therefore, may find the questions to be irrelevant or inaccurate.
3) ***Sampling;*** The sample selection for this research could have the limitation of not being sufficient. Although the sample size is identified to be sufficient for this research, a larger response rate would have resulted in increasing the statistical power and would also have brought greater confidence in results of the study.

Also the population is the subset of the entire population and specifically associated with the implementation of ERP, therefore, the issues associated with generalizability of the findings can occur, as the findings of this study could not be transferred to the other setting, such as to the healthcare sector or any other sector, because of the difference in the level of operations of organisations in different sectors. The findings of this study could not be directly applied to any organisation in different sector without making further modifications. The organisations that are looking to implement change within themselves and are looking forward to adopt and implement ERP can have the opportunity of using this research for understanding main barriers and facilitators. However, the implications of the findings would remain limited to specific industries. The further limitation in the research can also be associated with the lack of time and resources that restricted the interviews to the limited number of the participants and the larger sample could be more effective in obtaining more effective insight to their experience.

This study specifically explored the perspective of the end users and managers, but has not explored ERP implementation and its results. However, for understanding the effect of the ERP implementation, it is important that results of its successful implementation are also assessed. However, the future research can focus on assessing the results within organisation about the success or the failure of ERP.

1) The first suggestion that this research can make is enhancing the geographical coverage of the study in future. This study is based on limited geographical coverage, therefore, enhancing the geographical coverage can help in accessing more comprehensive results. Future research can also focus on implementing the ERP implementation program and may gather the data regarding the perceived barriers that end users may have from the financial and healthcare sector, as it will help in providing a different perspective towards managerial practices and strategies adopted to improve end user perception. Conducting the ERP implementation research in a different sector or industry can also be significant because it will help in providing a broader understanding towards the success or the failure of ERP adoption and implementation in different sectors.
2) Considering the limitations of this research in this section, specifically associated with the sample size, further research can focus on improving the sample size and

obtaining the data from the wider group of population. Further research should can also focus on accessing the industry sources, as they would be more effective in providing the insight to the industry databases and therefore, higher quality of data can be obtained.

3) Further research can also be conducted in the context of other developing nations in order to identify the transferability of findings of this research and what could be the difference in risk perception among end users in different countries. ERP is the technology that is being widely accepted in different nations for the purpose of brining improvement in business activities and functions. Developing nations are more likely to adopt new technology. Therefore, collecting the data from the developing nations would effective in understanding that how the growing nations are using their management and technological skills for improving their functions.
4) Another implication for further research is that this study is based on evaluating the attitude and perception of the end users. However, further research can be conducted for understanding the perception of the management and difficulties that the experience in bringing new technology in their organisation.
5) Future research can also possibly look at other factors or interventions other than training that can be used to address negative perceptions of ERP among employees. These future studies could explore the extent to which interventions like good leadership and effective communication potentially improve ERP adoption among end users and thereby reduce on the perceived barriers.

In conclusion, this research has made significant contributions to both literature and the practical field. It has identified ways to overcome the various barriers that affect adoption of ERP, which is critical because past research indicates that despite over two decades of work on ERP, the rate of failure of ERP has remained worryingly high. Findings from this research may be useful to other researchers looking at implementation of other technology-based projects. It is also very useful for managers or decision makers actively involved in ERP implementation. Both theory and the empirical findings of this research, significantly contribute towards understanding the interplay between the need of implementing new technology (ERP) at workplace and the perception of risks of end users in adopting ERP. This research also makes a valuable contribution to their existing body of literature by singling out training as a tool to resolve some of the issues that affect employee's adoption of ERP. The study makes a contribution of providing a detailed

insight into the problem of perceived risks, how perceived risks occur, the common forms of risks that are perceived and the influence of different perceived risks on individual's intention to adopt ERP. In addition, the conceptual framework that this study has developed can be used as the practical tool for improving the ERP adoption among end users and reducing the perceived barriers by enhancing training strategies.

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Appendices

Appendix A: Cover Letter for the Questionnaire Survey

AMANI BINKHATLA

Email: amani.binkhatla@plymouth.ac.uk

Mobile: +44 7446098361

UNIVERSITY OF PLYMOUTH
Faculty of Business

SCHOOL OF BUSINESS

Facilitating end users' adoption of ERP by using effective training and development to reduce end users' perceived risk in ERP implementation

Dear Sir/Madam,

I am conducting a research survey investigating the impact of ERP training on end user's perception of risks in ERP adoption in Saudi Arabian organisations and consequently on the employees' extent of usage of ERP in these organisations.

You have been selected to participate in this survey as one of the key respondents. I shall appreciate your time in responding to this survey using the attached link to the online questionnaire sent via email.

All responses to the survey will be treated in confidence and used solely for research purposes without linking the responses to individuals or firms. By participating in the survey, you will be contributing to the advancement of research in the field of business.

Please feel free to contact me if you need more information or you would like to request for the research results.

Many thanks in advance for your anticipated participation and useful feedback.

Regards,

Amani Binkhatla (Researcher)

School of Business

University of Plymouth

Appendix B: Participant Consent Form

Title of Research:
Facilitating end users' adoption of ERP by using effective training and development to reduce end users' perceived risk in ERP implementation

What is the purpose of the study?
The study aims to investigate the impact of ERP training and development on end user's perception of risks in ERP adoption in Saudi Arabian organisations and consequently on successful implementation of ERP in these organisations.

Who can take part?
Any employee working in one of the participating organisations

Can I withdraw from the study?
You can withdraw anytime during the study. However, data is collected anonymously and hence once your response is submitted it is not possible for us to identify and delete your response.

What do I have to do?
You will be sent the link to an online questionnaire. You can complete the survey by clicking on the linking. It will take around 20 minutes of your time. This survey is about your experience during and after implementation of ERP in your organisation.

Will my taking part be confidential?
None of your personal details will be collected so your anonymity is guaranteed. It is not possible for anyone, including the researcher, to know your identity. Your participation in the research is also confidential as the researcher has no way of finding out which of the targeted respondents have actually responded to the survey.

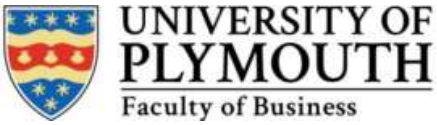
What will happen to the information that I give?
Only the researcher and his supervisors will have access to the data. Data will be stored in form of anonymous responses in accordance with Plymouth University's Data Protection Act. Questionnaires will be collectively analysed using statistical software. Data will be stored till publishing of the study.

Do I have to take part?
Participation in this research is entirely voluntary. You are under no obligation to participate in this research. However, your participation will be very valuable for the researcher in completing his research. Researcher will be more than happy to clarify any doubts that you have.

Contact information
If you would like further information about the study, please do not hesitate to contact:

Contact Person:	**Email:**	**Postal Address:**
Amani Binkhatla	amani.binkhatla@plymouth.ac.uk Mobile : +44 7446098361	4 Brompton Cottages London SW10 9HL

Appendix C: Translated copy of the Questionnaire Survey Tool



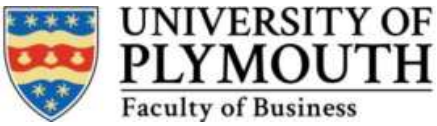
Demographics	Age (Year)	21-30	31-45	46-65	Over 65	
	Total work experience (Years)	Less than 5	More than 5 but less than 10	More than 10 but less than 20	More than 20 but less than 35	More than 35
	Tenure in present company (Years)	Less than 5	More than 5 but less than 10	More than 10 but less than 20	More than 20 but less than 35	More than 35
	Current position	Lower management	Middle management		Senior management	
	Gender	Male		Female		
		Strongly agree	Agree	Cannot say	Disagree	Strongly disagree
Performance risk	I am apprehensive that ERP may not deliver the expected standard of service.					
	Sometimes I feel worried that ERP may not produce the desired outcomes in my work					
	Sometimes I am worried that I may not be able to do what I wish to do using ERP?					
	I have sometimes found problems in using ERP such as system unavailability?					
Social risk	I think that I may lose the support of my friends/family members if I fail in achieving desired outcomes through ERP.					
	I think that with ERP I will lose the opportunity to interact with other team members?					
	I think that I will lose the valuable relationship with other staff (including the manager) if I use ERP.					
	I think that I will not be able to ask anyone for help if I fail to use ERP.					
Functional risk	I am unsure that ERP processes will take place as expected.					
	I fear that ERP is not reliable.					
	I am concerned that in ERP I cannot verify if the transaction has been actually completed.					

Time loss risk	I am worried that with ERP it will take longer for me to do my work.					
	I am sometimes worried that ERP transactions may take longer to process					
	I am worried that I will be unsure about how long it will take ERP to complete the process					
Financial risk	I am afraid that using ERP may cause me or my company some financial loss.					
	I find it risky to do process financial transactions through ERP.					
	I think that learning how to use ERP can cause me financial loss					
Security and privacy risk	I am afraid that if I use ERP my personal details will be stolen.					
	I am worried that someone may access my personal/ professional information through ERP					
	I am concerned that if I enter incorrect details in ERP I may not be able to change it					
	Sometimes I feel suspicious about the reliability of ERP system					
	News about ERP failure worries me that it may happen to me also					
	I am worried that my ERP tasks may not be secure					
	I am concerned about how ERP stores my private information					
Psychological risk	I am worried that I may undergo stress if something goes wrong with ERP					
	I am concerned about the stress that I might undergo if I cannot use ERP					
	I think using ERP would lead to stress and/or anxiety					
CI- Uncertainty avoidance	I am unsure of the reliability of ERP system					
	I am concerned that ERP system may not work as expected					
	I am concerned that I may not be able to use ERP system as expected					
	I am worried that I may not get the chance to rectify mistakes when using ERP system					
	I am worried that I may not understand how ERP works					
	I prefer seeing things happening with my own eyes rather than electronically					

	I prefer to make sure that whatever I have done has been done the way I wanted					
	I fear that ERP does not allow me to control my activity like the old system					
CI- Power distance	I am worried concerned that I may not be able to control the process/ job in ERP as I can do in the old system					
	If it was in my control I would have not selected ERP					
	I feel that I am being pressured into using ERP					
	I feel that I have no choice in using ERP					
CI- Collectivism	I am worried that I will not be working in the same team if I use ERP					
	I worry that I will not be able to interact with my colleagues if I use ERP					
	I am worried about lack of human interaction in ERP					
CI- Masculinity	I am worried that I will have to compete against my colleagues if I use ERP					
	I am worried for my colleagues who will not be able to use ERP					
	I am concerned that ERP will affect cooperation among my team members					
CI- Long term	I am worried that in long terms ERP will not provide desired results for me					
	I think ERP will be replaced by other technology in future					
	I do not think that learning ERP will benefit me in future					
Training and support	I received complete training for how to use ERP to my business activities					
	I think ERP raining was adequately timed by my organisation					
	With training I have gained complete understanding of features, functions and abilities of the ERP system					
	ERP training was adequately designed to teach ERP to members of our organisation					
	ERP trainers were knowledgeable and managed to train people in the best possible manner					
	I think the ERP training was relevant for my job					
	I think the training provided was of practical value for the trainees					

	I think that training made it easy for me to understand and use ERP					
	Following the training I feel confident in using ERP					
	ERP training taught me how to troubleshoot or seek support in using ERP					
Perceived Ease of Use of ERP	I think that ERP is easy to use					
	I feel comfortable in using ERP					
	I think ERP is easy to operate for me					
	I find it easy to get the ERP system to do what I want					
	My interaction with ERP system is clear and understandable					
	I find ERP system flexible to use					
	I think I can accomplish all tasks using ERP					
Perceived Usefulness of ERP	I think that ERP has improved my job performance					
	I think using ERP in my job enables me to accomplish tasks more quickly					
	I think using the ERP system in my job improves my productivity					
	I think using the ERP system enhances my effectiveness on the job					
	I think using the ERP has made it easier for me to do my job					
End users extent of usage of ERP	I use ERP for most of my business activities					
	I willingly try to learn and use ERP					
	I intend to use ERP for all tasks in future					

Appendix D: Translated copy of the Interview Tool



Interview Questions

1) What are the main risks that you think are likely to affect people's perception about ERP systems? Can you also give me reasons or examples of why you have selected these risks?
2) What are the main risks in using ERP that will make people apprehensive about using ERP?
3) What do you think might happen if users' perception of risk in using ERP is high?
4) How do you think management can implement ERP so as to reduce employees' level of perceived risks in adopting ERP?
5) How is training useful in reducing the user's perception of different risks in using ERP?
6) What kind of training program would you recommend to ensure lower perception of risks among ERP users?
7) How can training help in eliminating users' fear that they may not be able to perform their functions using ERP?
8) How is training helpful in reducing users' concern that ERP system may not function as desired?
9) How can people be trained to lower security and privacy risks in using ERP?
10) What kind of training programs be helpful in raising users' perception of ease of use of ERP systems?
11) How can we educate users about usefulness of ERP in their role?

Appendix E: Ethical Approval form

Date: 15 February 2019

Dear Amani,

Ethical Approval Application No: FREIC1819.19
Title: Facilitating end users' adoption of ERP by using effective training and development to reduce end users' perceived risk in ERP implementation.

Thank you for your application to the Faculty Research Ethics & Integrity Committee (FREIC) seeking ethical approval for your proposed research.

The committee has considered your application and is satisfied that the project complies with Plymouth University's ethical standards for research involving human participants.

However, please note that GDPR policies and the Data Protection Act (2018) has to be carefully followed in how data is collected, stored and use, in addition to the rights of participants. In particular, given that 'Participants will be recruited through the HR manager of their organisation', you as the researcher must ensure that participants are protected from any potential harm (e.g., psychological) resulting from this process, as this process may place participants in a vulnerable position given the unequal relationship between the HR manager and participants.

Approval is for the duration of the project. However, please resubmit your application to the committee if the information provided in the form alters or is likely to alter significantly.

The FREIC members wish you every success with your research.

Yours sincerely
(Sent as email attachment)

Dr James Benhin
Chair
Faculty Research Ethics & Integrity Committee
Faculty of Business

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